JVC

SERVICE MANUAL

COMPACT DISC PLAYER

MODEL No. XL-V250BK

COMPACT disc DIGITAL AUDIO

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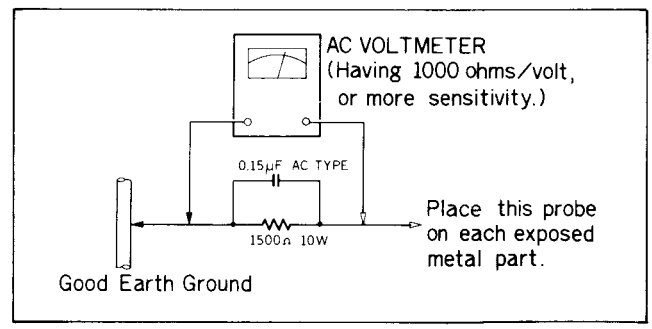
This manual combines two single volumes: Service Manual and Parts List.

No. 2969
Jan. 1987

Safety Precautions

1. The design of this product contains special hardware, many circuits and components specially for safety purposes.
   For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the Parts List in the Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and/or the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard.
   When service is required, the original lead routing and dress should be observed, and they should be confirmed to be returned to normal, after re-assembling.
5. Leakage current check
   (Safety for electrical shock hazard)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the Products (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5 mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1500 Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.).
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



CHECK THE VOLTAGE SELECTOR'S SETTING

(Except for U.S.A., Canada, Australia, U.K. and Continental Europe)

Before inserting the power plug, please check that the voltage selector's setting corresponds with the line voltage in your area. If it doesn't be sure to reset the voltage selector before operating this equipment.
The voltage selector may be located on the rear or bottom of the unit, or underneath the platter.

CAUTION : Before setting the voltage selector to the proper voltage, disconnect the power plug.

Important for Laser Products

1. CLASS 1 LASER PRODUCT
2. DANGER: Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. CAUTION: There are no serviceable parts inside the Laser Unit.
4. CAUTION: Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.
5. CAUTION: The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
6. CAUTION: If safety switches malfunction, the laser is able to function.
7. CAUTION. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

VARNING: OSYNLIG LASERSTRÅLNING UPPSTÅR VID KOMPONENTENS ÖPPNING NÄR SÄKERHETSBRYTAREN ÄR FRÅNSLAGEN.

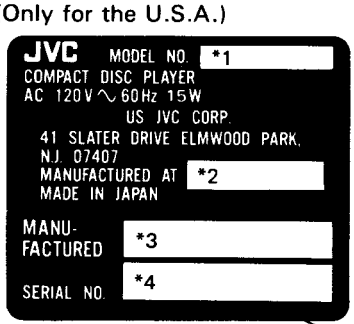
ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅPNING NÅR SIKKERHETSBRYTEREN ER AVSLOTT.
UNNGÅ UTSETTELSE FOR STRÅLING.

VAROITUS: LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ (NÄKYMÄTÖNTÄ) SILMILLE VAARALLISTA LASERSÄTEILYÄ.

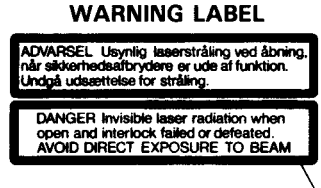
REPRODUCTION AND POSITION OF LABELS

IDENTIFICATION LABEL BY DHHS
(Only for the U.S.A.)

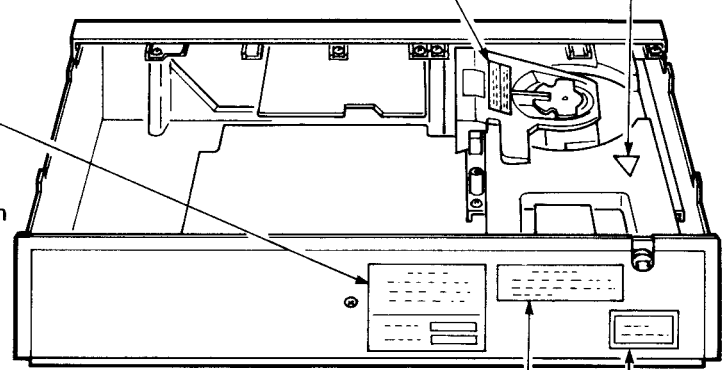


Note:
*1 Model number
*2 Identification code of factory
*3 The date of manufacture
*4 The serial number of production

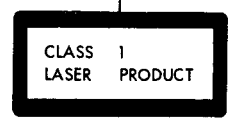
WARNING LABEL


ADVARSEL Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.
DANGER Invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM

HAZARD SYMBOL LABEL
(Only for Continental Europe)

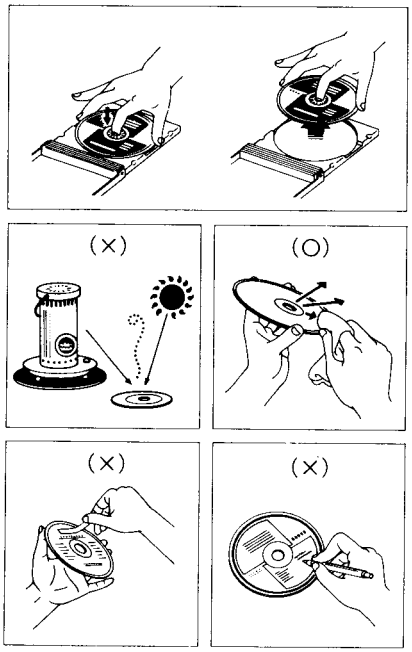


CERTIFICATION LABEL BY DHHS
(Only for the U.S.A.)



CLASSIFICATION LABEL
(Only for Continental Europe, the U.K. and Australia)

HOW TO HANDLE A COMPACT DISC



Since compact discs are plastic, they are easily damaged; if they get dirty, dusty, damaged or warped, the signal will not be picked up correctly, and such discs may cause the player to malfunction. When using a compact disc, take care of the following points.

- Do not touch the surface to be played (reflective silver i.e. the side without the label) when playing or handling the discs.
- **Storage**
  Make sure to keep discs in their cases.
  If discs are piled on top of one another without cases, they may be damaged. Do not put discs in a place exposed to direct sunlight or in a place with high temperature and humidity.
  Especially, avoid leaving discs in your car.
- **Maintenance of discs**
  When fingerprints and dirt adhere to a disc, wipe off with a soft and dry cloth.
  If it is difficult to clean, wipe off with a cloth moistened with water.
- Do not use analog record cleaners, benzine, alcohol or antistatic agent.
- Do not damage the label side or stick paper or adhesive tape to it.

BEHANDLUNG EINER COMPACT-DISC

Da Compact-Discs aus Kunststoff hergestellt sind, können sie leicht beschädigt werden. Bei Beschädigung, Verschmutzung, Staubablagerung oder Deformation kann das Signal nicht korrekt abgelesen werden, wodurch möglicherweise Betriebsstörungen des Players hervorgerufen werden.
Bei Benutzung einer Compact-Disc auf folgende Punkte achten.

- Die Abspielfäche (die silbrig reflektierende bzw. unbedruckte Seite) nicht berühren.
- **Lagerung**
  Eine Compact-Disc stets in der mitgelieferten Schutzhülle aufbewahren.
  Werden Compact-Discs ohne Schutzhülle aufeinander gelagert, können sie beschädigt werden. Compact-Discs niemals direktem Sonnenlicht oder hohen Temperaturen bzw. Feuchtigkeit aussetzen. Compact-Discs nicht im Auto liegen lassen.
- **Pflege von Compact-Discs**
  Sind Fingerabdrücke bzw. Schmutz erkennbar, diese mit einem weichen und trockenen Tuch abwischen.
  Wenn notwendig, ein mit Wasser angefeuchtetes Tuch verwenden.
- Keinerlei Schallplattenreinigungsmittel, Benzin, Alkohol oder antimagnetische Reiniger verwenden.
- Die Etiquette-Seite nicht beschädigen oder bekleben.

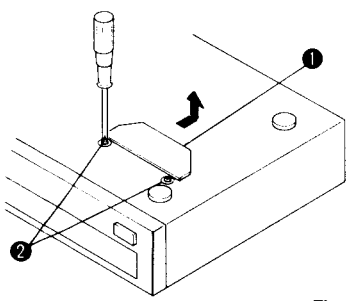


Fig. 3
Abb. 3
Afb. 3

BEFORE USE

Do not insert power plug to the receptacle until completion of all the preparations.

1. Remove a holder ❶ and two screws ❷ for transportation. (Fig. 3)

Note:

- **Be sure to keep the holder and screws.**
- **Be sure to prepare for shipment according to the procedures opposite to the above.**

2. Set the voltage selector ❸ to your local line voltage. (Fig. 4)
   When this equipmemt is used in an area where the supply voltage is different from the preset voltage, reset the voltage selector to the correct position.
   (Not provided on units for U.S.A., Canada, Australia, U.K. and Continental Europe.)

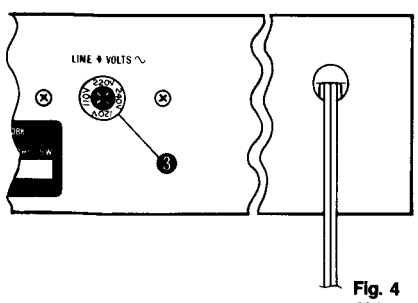


Fig. 4
Abb. 4
Afb. 4

VOR INGEBRAUCH-NAHME

Das Netzkabel erst an die Wandsteckdose anschließen, wenn alle Vorbereitungen durchgeführt wurden.

1. Halterung ❶ und die zwei Schrauben ❷ für Transportsicherung entfernen. (Abb. 3)

Hinweis:

- **Halterung und Schrauben unbedingt aufbewahren.**
- **Für eventuellen späteren Transport, die oben beschriebenen Maßnahmen in sinngemaß umgekehrter Reihenfolge durchführen.**

2. Schalten Sie den Spannungswähler ❸ auf Ihre örtliche Netzspannung. (Abb. 4)
   Wenn die vorengestellte Netzspannung an diesem Gerät nicht mit der tastächlich vorhandenen übereinstimmt, den Spannungswähler auf den erforderlichen Wert einstellen.
   (Nicht vorgesehen an den Geräten, die für die USA, Kanada, Australien, Größbritannien und Kontinental-Europa bestimmt sind)

CONNECTION DIAGRAM
ANSCHLUSSDIAGRAMM
SCHEMA DE RACCORDEMENTS
AANSLUITINGSSCHEMA
DIAGRAMA DE CONEXIONES

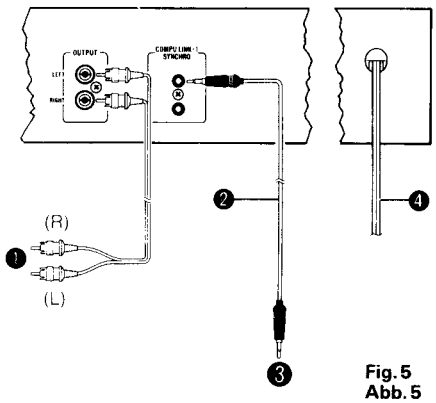


Fig. 5
Abb. 5
Afb. 5

❶ To the input terminal (CD, AUX or TAPE PLAY) of an amplifier.
Zum Eingangsanschluß (CD, AUX, oder TAPE PLAY) das Verstärkers.
Vers la borne d'entrée (CD, AUX ou TAPE PLAY) d'un amplificateur.
Naar ingangaansluiting (CD, AUX, of TAPE PLAY) van een versterker.
Hacia el terminal de entrada (CD, AUX o TAPE PLAY) de un amplificador.

❷ Provided remote cable
Mitgerliefertes Fernbedienkabel
Câble de télècommande fourni
Bijgeleverde afstandsbedieningskabel
Cable de control remote suministrado

❸ To the "SYNCHRO" terminal of an amplifier or a cassette deck.
Zum "SYNCHRO" Anschluß eines verstärkers oder eines Cassettendecks.
Vers la borne "SYNCHRO" d'un amplificateur ou d'une platine d'enregistrement.
Naar de "SYNCHRO" aansluiting van een versterker of een cassettedeck.
Hacia el terminal "SYNCHRO" de un amplificador o magnetófono.

❹ To the wall outlet.
Zur Netzsteckdose.
Vers une prise secteur.
Naar stopkontakt.
Hacia el tomacorriente.

■ Connecting to an amplifier

Notes:
- **When connecting any component, set the POWER button to off.**
- **Connect the plugs firmly after confirming the L (Left) and R (Right).**

Connect the OUTPUT terminals of the player to the input terminals (CD, AUX or TAPE PLAY) of the amplifier with the provided signal cords as shown in Fig. 5.
(Do not connect to the PHONO terminals of the amplifier.)

■ Connecting to a cassette deck etc.

Connect the COMPU LINK-1/SYNCHRO terminals of this unit to the COMPU LINK-1/SYNCHRO terminals of an amplifier, cassette deck, etc. to generate COMPU LINK Control System. Concerning compatible amplifiers or cassette decks, consult your dealer.

■ COMPU LINK CONTROL SYSTEM

This is a convenient system which has been originated and developed by JVC. The following are the brief explanations of its major performances:

Automatic Source Selection
When the provided remote cables are used for connecting this unit to other components which have COMPU LINK-1/SYNCHRO terminals, the switch-over of all system components is possible with simple one-touch of the source selector button of JVC's amplifier or receiver. By doing this, the corresponding component will start playing automatically. The source select button of the remote control unit or the activation button of the desired component can be also used for this purpose.
When the components have been switched over, the previous component will stop playing within five seconds.

Synchronized Recording
Synchronized recording refers to the process in which the cassette deck starts recording in synchronism with the CD player. Perform the synchronized recording as follows.
1. Set the cassette deck to the REC/PAUSE mode in accordance with the procedures in the instruction manual.
2. If you want the programmed recording, program the desired tunes in any order you wish to hear.
3. Press the PLAY/PAUSE button of the CD player. By so doing, the cassette deck is placed in the record mode and synchronized with the CD player for recording. Synchronized recording thus can be made possible.

■ Anschluß an einen Verstärker

Hinweise:
- **Bei Anschlüssen aller Art die Netzspannung ausschalten.**
- **Die Stecker auf richtigen (Links/Rechts) Anschluß und sicheren Sitz überprüfen.**

Die OUTPUT-Buchsen des Players über die mitgelieferten Kabel mit den Eingangsbuchsen des Verstärkers (CD, AUX oder TAPE PLAY) verbinden, wie in Abb. 5 gezeigt.
(Nicht an den PHONO-Buchsen des Verstärkers anbringen!)

■ Anschluß an ein Cassettendeck u.s.w.

Die COMPU LINK-1/SYNCHRO-Buchsen dieses Geräts an die COMPU LINK-1/SYNCHRO-Buchsen eines Verstärkers, Kassettendecks o.ä. anschließen, um das COMPU LINK Bedienungssystem zu aktivieren. Ihr Audio-Händler kann Ihnen die zusammenpassenden Geräte vorstellen.

■ COMPU LINK BEDIENUNGSSYSTEM

Dieses bedienungsfreundliche System ist bei JVC erfunden und entwickelt worden. Es folgen kurze Erläuterungen seiner Eigenschaften:

Automatische Quellenwahl
Wenn die mitgelieferten Verbindungskabel zum Anschluß dieses Geräts an andereKomponenten verwendet werden, die mit COMPU LINK-1/SYNCHRO-Anschlußbuchsen ausgestattet sind, dann lassen sich sämtliche Bauteile mit einem einzigen Druck auf die Quellenwahltaste des JVC-verstärkers oder -Receivers umschalten. Das entsprechende Gerät beginnt dann automatisch zu spielen. Die Quellenwahltaste der Fernbedienung oder die Auslösetaste der gewünschten Komponente kann ebenso dazu verwendet werden. Wenn die Komponenten umgeschaltet sind, wird derWiedergabebetrieb ds vorigen Bauteils innerhalb fünf Sekunden abgebrochen.

Synchronisierte Aufnahme
Synchronisierte Aufnahme ist ein Vorgang, wo das Cassettendeck seinen Aufnahmebetrieb gleichzeitig zum CD-Player aufnimmt. Snychronaufnahmen wie folgend durchführen.

1. Das Cassettendeck gemäß den Anweisungen der Bedienungsanleitung auf Betrieb REC/PAUSE stellen.
2. Für vorprogrammierte Aufnahmen die aufzunehmenden Stücke in der gewünschten Reihenfolge einprogrammieren.
3. Die PLAY/PAUSE-Taste des CD-Players drücken. Das Cassettendeck wird dadurch auf Aufnahmebetrieb geschaltet und für synchrone Aufnahmen vom CD-Player bereitgestellt.

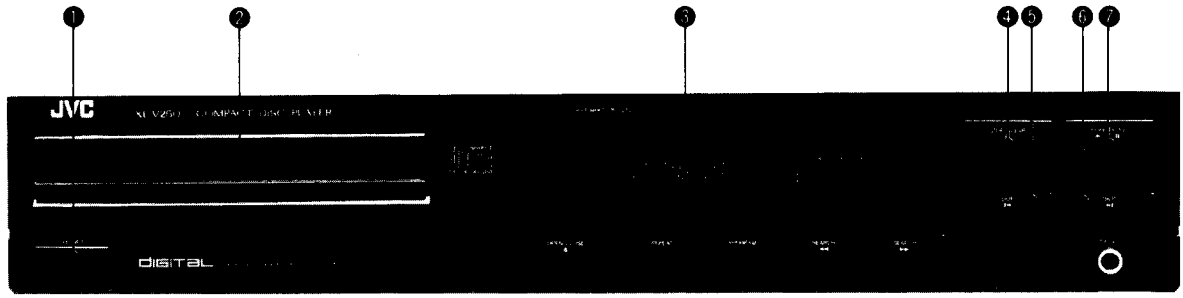
Notes:

- Synchronized recording stops automatically when the CD player stops playing.
- To cancel synchronized recording, press the STOP button of the CD player or cassette deck.
- Press the REC and PLAY buttons of the cassette deck when starting in the middle of play.
- During synchronized recording, the operation of the PLAY/PAUSE button is interlocked with the cassette deck.
- When the REC/PAUSE mode is set by pressing PAUSE button after pressing the REC and PLAY buttons simultaneously, synchronized recording is not possible. For details, refer to the instruction manual of the cassette deck.
- Abnormal operation will result if the power supply of the component(s) is interrupted midway. If this happens, press the activation button again to restart.
- Ensure that the COMPU LINK-1/SYNCHRO terminals of individual components are connected with the provided remote cables. Also be sure to read the instruction manual for each component very carefully.
- The source is locked to the CD position during synchronized recording to avoid accidental stops or switch-over to another component. To switch over the components, cancel synchronized recording first.

Hinweise:

- Die Synchronaufnahme wird automatisch abgebrochen, wenn sich der CD-Player abschaltet.
- Zum Ausschalten einer Synchronaufnahme die STOP-Taste am CD-Player oder Cassettendeck drücken.
- Für Aufnahmen, die in der Plattenmitte beginnen sollen, sind die Tasten REC und PLAY am Cassettendeck zu betätigen.
- Während Synchronaufnahmen ist die Funktion der Taste PLAY/PAUSE mit dem Cassettendeck zusammengeschaltet.
- Wenn man nach gleichzeitigem Betätigen der Tasten REC und PLAY auf Betrieb REC/PAUSE schaltet, indem man die PAUSE-Taste drückt, dann ist keine synchrone Aufnahme möglich. Einzelheiten dazu entnehmen Sie bitte der Bedienungsanleitung des Cassettendecks.
- Es kommt zu Betriebsstörungen, wenn die Stromversorgung eine soder mehrerer Anlagenteile unterbrochen wird. In solch einem Fall ist zum Neustart die Auslösetaste zu drücken.
- Versichern Sie sich, daß die COMPU LINK-1/SYNCHRO-Buchsen einzelner Anlagenteile mit den vorgesehenen Verbindungskabeln versehen sind. Ebenfalls nicht versäumen, die Bedienungsanleitungen der einzelnen Geräte sorgfältig durchzulesen.
- Die Aufnahmequelle ist während der Synchronaufnahme auf die CD-Position festgeschaltet, um ungewolltes Unterbrechen oder Umschalten auf eine andere Anlagenkomponente zu verhindern. Vor dem Umschalten auf ein anderes Gerät ist die Synchronaufnahme daher zuerst abzuschalten.

DESCRIPTION AND FUNCTIONS
BESCHREIBUNG UND FUNKTIONEN
DESCRIPTION ET FONCTIONS
BESCHRIJVING EN FUNKTIES
DESCRIPCIONES Y FUNCIONES



❶ **POWER**
Press to switch on the POWER, and the display lights. Press again to switch off the POWER, and the display goes off.

❷ **Disc platter**
Load the disc to be played.
While the disc platter is moving, do not turn the power off or push the disc platter by hands, etc.

❸ **Display**
This shows vartious program data including playing time, tune number, etc. For more details, see "DISPLAY" on page 23.

❹ **STOP (■)/CLEAR**
Press this button once to stop playing and twice to erase the programmed tunes.

❺ **SKIP (|◀) (backward)**
Press once during play to return the sensor to the start of the current tune. Press twice to return the sensor to the start of the previous tune. Each time it is pressed, the sensor moves backward by one tune. Keep pressing this button to return to the beginning of the previous tune.

❻ **SKIP (▶|) (forward)**
Press once during play to move the sensor to the start of the next tune. Each time it is pressed, the sensor moves forward by one tune. Keep pressing this button to proceed to the beginning of the next tune.

❼ **PLAY (▶)/PAUSE (II)**
Press this button to start play from the first tune or the programmed play after the loading of a disc is finished. Press this button again to suspend play temporarily; the PAUSE indicator lights. To restart playing, press this button again.

❶ **Netzspannung (POWER)**
Zum Einschalten der Stromversorgung (POWER) betätigen; die Anzeigelampe leuchtet auf. Zum Ausschalten des Netzstroms die Taste noch einmal betätigen; die Anzeigelampe erlischt.

❷ **Disc-Halter**
Die für Abspielbetrieb vorgesehene Disc laden.
Wenn der Disc-Halter bewegt wird, die Spannungsversorgung nicht ausschalten, den Disc-Halter nicht per Hand bewegen etc.

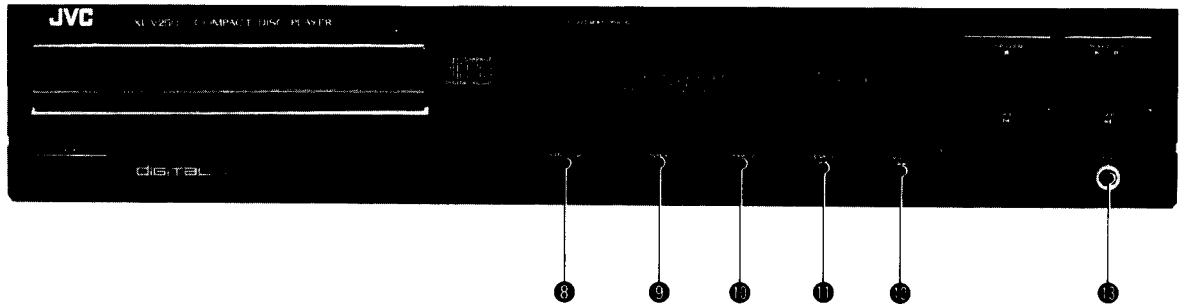
❸ **Display**
Das Display informiert über verschiedene Programmierdaten, inkl. Wiedergabezeit, Titelnummer etc.. Weitere Angaben im Abschnitt "DISPLAY" auf Seite 23.

❹ **STOP (■)/CLEAR-Taste**
Taste einmal drücken, um die Wiedergabe abzubrechen, bzw. zweimal, um die vorprogrammierten Titel zu löschen.

❺ **Sprungtaste (SKIP |◀) (rückwärts)**
Während der Wiedergabe wird der Abnehmer durch einmaliges Betätigen dieser Taste zum Anfang des jeweils eingestellten Titels gesetzt. Bei zweimaliger Betätigung wird der Abnehmer zum Anfang des jeweils vorherigen Titels gesetzt. Wenn diese Taste innerhalb einer Sekunde betätigt wird, wird der Abnehmer um je einen Titel zurückgesetzt. Diese Taste betätigen um zurück zu gehen zum Anfang des vorherigen Titels.

❻ **Sprungtaste (SKIP ▶|) (vorwärts)**
Während der Wiedergabe wird der Abnehmer durch einmaliges Betätigen dieser Taste jeweils zum Anfang des folgenden Titels gesetzt. Jedes Betätigen der Taste setzt den Abnehmer um einen Titel weiter. Diese Taste betätigen um weiter zu gehen zum Anfang vom nächste Titel.

❼ **Wiedergabe/Pause-Taste (PLAY ▶ /PAUSE II)**
Diese Taste betätigen, um die Wiedergabe vom ersten Titel an oder die programmierte Wiedergabe zu starten, nachdem der Ladevorgang beendet is. Bei nochmaligem Betätigen dieser Taste wird die Wiedergabe zeitweilig unterbrochen; das PAUSE Zeichen leuchtet. Zur Fortsetzung der Wiedergabe diese Taste nochmals betätigen.



8 OPEN/CLOSE (▲)
Press to move the disc platter in and out. Press once and the disc platter will move out; now load a disc and press again to move the platter back in. The disc is now ready to be played.
If it is pressed during play, play is interrupted, the program is erased from memory and the disc platter comes out.

9 REPEAT
Press for repeat play of all the tunes on a disc or the programmed tunes. Then the REPEAT indicator lights.
To release the repeat mode, press again and the indicator goes off.

10 PROGRAM
Press this button to program tunes.
The PROGRAM indicator lights when programming or playing back programmed tunes.

11 SEARCH (◄◄) (backward)
Press to search for the required tune by moving the sensor back.

12 SEARCH (►►) (forward)
Press to search for the required tune by moving the sensor forward; sound can be heard at reduced volume level while search is taking place in the play mode.

13 PHONES
Connect head-phone plug.

8 Öffnen/Schließen-Taste (OPEN/CLOSE ▲).
Zum Ein- und Ausfahren des Disc-Halters drücken. Einmal drücken, so daß der Disc-Halter ausgefahren wird. Eine Disc laden, und nochmals drücken, so daß der Disc-Halter wieder eingefahren wird. Die Disc ist nun abspielbereit.
Wird diese Taste während der Wiedergabe gedrückt, wird letztere abgebrochen, das Programm aus dem Speicher gelöscht und der Disc-Halter ausgefahren.

9 Wiederholungstaste (REPEAT)
Diese Taste betätigen, um alle oder programmierte Titel zu widerholen. Die REPEAT Anzeige leuchtet.
Zur Abschaltung der Wiederholfunktion die Taste nochmals betätigen; die Anzeige erlischt.

10 Programmtaste (PROGRAM)
Diese Taste betätigen, um Titel zu programmieren.
Bei Programmierung oder Wiedergabe programmierter Titel leuchtet die PROGRAM Anzeige.

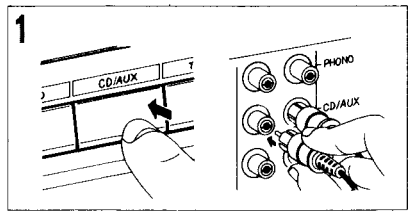
11 Suchtaste (SEARCH ◄◄) (rückwärts)
Diese Taste betätigen, um den Abnehmer für Suchlauf bis zu einem gewünschten Titel in Rückwärtsrichtung bewegen.

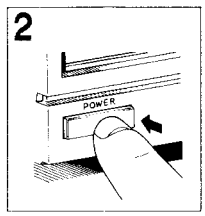
12 Suchtaste (SEARCH ►►) (vorwärts)
Diese Taste betätigen, um den Abnehmer für Suchlauf in Vorwärtsrichung zu bewegen. Bei Durchführung des Suchlaufs während der Wiedergabe bleibt der Ton bei reduzierter Lautstärke eingeschaltet.

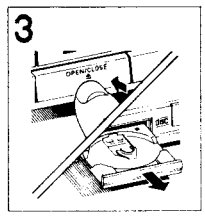
13 Kopfhörer (PHONES)
Zum Anschluß des Kopfhörerkabels.

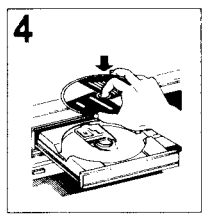
HOW TO OPERATE

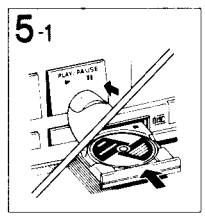
BEDIENUNG

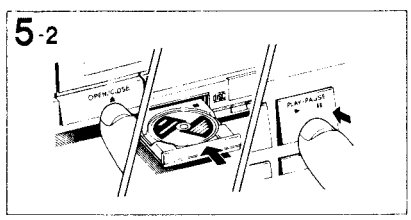


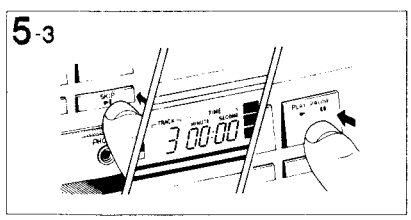


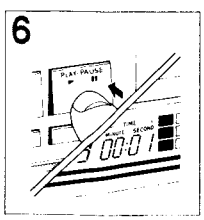


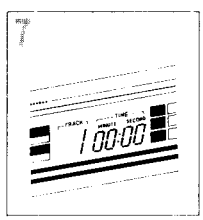


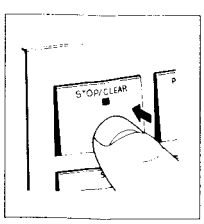


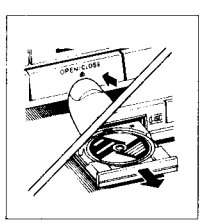












Normal play

1. Set the source selector of your amplifier to correspond to the terminals to which the player is connected (CD, AUX or TAPE PLAY).
2. Press the [POWER] button.
3. Press the [OPEN/CLOSE (▲)] button to move out the platter.
4. Load a disc with its label up.
   Make sure the disc fits correctly on the platter.

5-1. Press the [PLAY (▶)/PAUSE (❚❚)] button. The platter moves into the player automatically and play starts from the first tune. Or,

5-2. Press the [OPEN/CLOSE (▲)] button to display the contents of the disc for about 3 seconds. After this, press the [PLAY (▶)/PAUSE (❚❚)] button.

5-3. Press the [SKIP (▶▶|)] button until the required track number is displayed, then press the [PLAY (▶)/PAUSE (❚❚)] button to start playback.

6. During play, the track number and the elapsed time of the selection being played are shown in the display window.
7. When play is finished, the laser pickup moves back to the first tune, and play automatically stops with the operation held on standby.

Note:

- **While the disc platter is moving, do not turn the power off or push the disc platter by hands, etc.**

Normale Wiedergabe

1. Den Signalewahlschalter des Verstärkers entsprechend dem für den Player gewählten Anschluß einstellen (CD, AUX oder TAPE PLAY).
2. Die [POWER] -Taste betcatigen.
3. Die [OPEN/CLOSE (▲)] -Taste betätigen, um den Disc- Halter auszufahren.
4. Eine Compact-Disc mit nach oben zeigendem Etiquette einlegen.
   Auf korrekten Sitz der Compact-Disc achten.

5-1. Die [PLAY (▶)/PAUSE (❚❚)] -Taste betätigen. Der Disc-Halter wird eingefahren, und die Wiedergabe startet vom ersten Titel an. Oder,

5-2. Die [OPEN/CLOSE (▲)] -Taste betätigen, so daß der Disc-Inhalt für ca. 3 Sekunden angezeigt wird. Hierauf die [PLAY (▶)/PAUSE (❚❚)] -Taste betätigen.

5-3. Die [SKIP (▶▶|)] -Taste betätigen, bis die gewünschte Titelnummer im Display erscheint. Zum Wiedergabestart dann die [PLAY (▶)/PAUSE (❚❚)] -Taste betätigen.

6. Während der Wiedergabe werden Nummer und verstrichene Zeitspanne des laufenden Titels im Anzeigefenster angegeben.
7. Nach Ende der Wiedergabe kehrt der Laser-Tonabnehmer selbsttätig zum ersten Titel zurück, und die Wiedergabe wird abgebrochen, wobei das Gerät in Betriebsbereitschaft bleibt.

Hinweis:

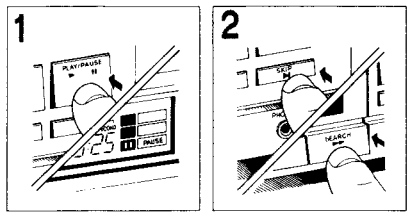
- **Solange sich der Disc-Halter bewegt, die Spannungsversorgung nicht abschalten, den Disc-Halter nicht von Hand bewegen etc.**

To stop play

- Press the [STOP (■)/CLEAR] button; play stops and the player enters the standby mode. (The condition when a disc has been loaded and its contents have been read.)
- To remove the disc, press the [OPEN/CLOSE (▲)] button. After removal of the disc, press the [OPEN/CLOSE (▲)] button again to retract the disc platter.

Beenden der Wiedergabe

- Die [STOP (■)/CLEAR] -Taste betätigen, die Wiedergage wird beendet, und der Player wird auf Betriebsbereitschaft geschaltet (Der gleiche Status wie nach Einlegen und Wieder gabebereitshaft einer Disc und Ablesen des Disc-Inhalts.)
- Zum Entnehmen der Disc die [OPEN/CLOSE (▲)] -Taste betätigen. Nach Entnehmen der Disc nochmals die [OPEN/CLOSE (▲)] -Taste betätigen,um den Disc-Halter wieder einzufahren.



To stop play temporarily

1. Press the [PLAY (▶)/PAUSE (❚❚)] button. The PAUSE indicator lights then play stops with the pickup in the same position.
2. The [SKIP (⏮)], [SKIP (⏭)] buttons and the manual search operation can be performed in the pause mode.

• To use the manual search function, press the [SEARCH (◀◀)], [SEARCH (▶▶)] buttons and scan to the desired positon while watching the time display. When the required time is displayed, press the [PLAY (▶)/PAUSE (❚❚)] button.

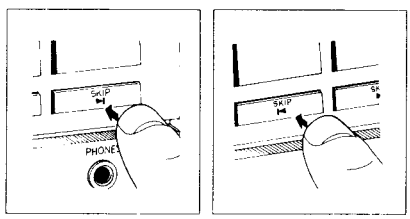
3. To restart play, press the [PLAY (▶)/PAUSE (❚❚)] button. The PAUSE indicator will go out.

Unterbrechung der Wiedergabe

1. Die [PLAY (▶)/PAUSE (❚❚)]-Taste betätigen. das PAUSE Zeichen leuchtet; die Wieder gabe stoppt und der Tonabnehmer bleibt in dieser Position.
2. Bei Pause-Betriebsart können die [SKIP (⏮)], [SKIP (⏭)]-Taste betätigt und der manuelle Suchlauf durchgeführt werden.

• Bei manuellem Suchlauf die [SEARCH (◀◀)], [SEARCH (▶▶)]-Tasten drücken, und den Suchaluf zuf gewünschten Position unter Beobachtung der Zeitanzeige durchführen. Bei Erreichen der gewünschten Zeitposition, die [PLAY (▶)/PAUSE (❚❚)]-Taste drücken.

3. Zur Fortsetzung der Wiedergabe,die [PLAY (▶)/PAUSE (❚❚)]-Taste drücken, worauf das PAUSE Zeichen erlischt.



To scan to another tune during play

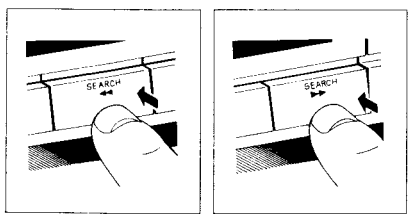
• Press the [SKIP (⏭)] button to start play from the start of the next tune. Press the [SKIP (⏮)] button once to restart play from the start of the current tune. To sart play from the previous tune, **press the [SKIP (⏮)] button twice.**

• Since each time the [SKIP (⏮)], [SKIP (⏭)] buttons are pressed, the pickup moves forward or backward in steps of one tune, press them the required number of times. In addition, keep pressing these buttons to return/proceed to the requested tune.

Titelsuche während der Wiedergabe

• Die [SKIP (⏭)]-Taste betätigen, um die Wiedergabe vom jeweils folgenden Titel an zu starten. Die [SKIP (⏮)]-Taste betätigen, um die Wiedergabe vom jeweils wiedergegebenen Titel erneut zu starten. Um die Wierdergabe vom Beginn des jeweils vorherigen Titels zu starten, **die [SKIP (⏮)]-Taste zweimal betätigen.**

• Mit jeder Betätigung der [SKIP (⏮)], [SKIP (⏭)]-Tasten wird der Abnehmer in Ein-Titel Schritten in Vorwärts- oder Rückwärtsrichtung bewegt, die Taste wie erforderlich betätigen. Außerdem, diese Tasten betätigen un zurück- oder weiter zu gehen bis zum gewunschten Titel.



Manual search

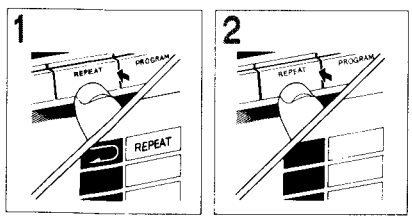
• When either of the [SEARCH (◀◀)], [SEARCH (▶▶)] buttons are pressed during play, the pickup moves and you can hear speeded up sound at reduced volume.

• When [SEARCH (◀◀)], [SEARCH (▶▶)] buttons are used in the pause mode, operate these buttons while watching the time display as there is no sound.

Manueller Suchlauf

• Wird eine der [SEARCH (◀◀)], [SEARCH (▶▶)] Tasten während der Wiedergabe gedrücket, wird der Abnehmer bewegt, wobei die beschleunigte Tonwiedergabe bei reduzierter Lautstärke erfolgt.

• Werden die [SEARCH (◀◀)], [SEARCH (▶▶)] Tasten bei Pausebetrieb betätigt, die Zeitanzeige beachten, da in diesem Fall keine Tonwiedergabe erfolgt.

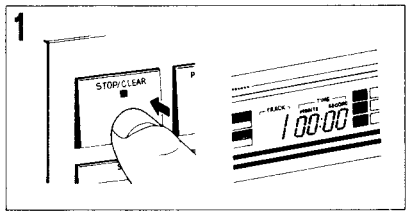


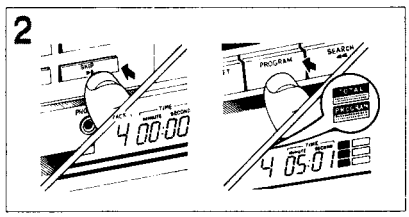
Repeat play

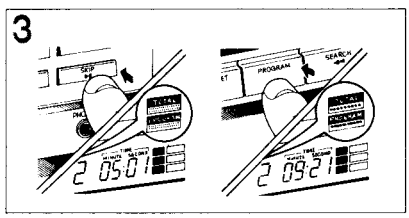
1. Press the [REPEAT] button to repeat the whole disc or the programmed tunes in the programmed order; the [REPEAT] indicator lights.
2. To release the repeat function, press the [REPEAT] button again.

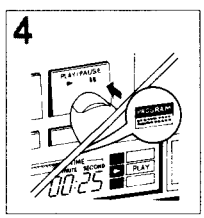
Wiedergabe-Wiederholung

1. Zur Wiederholung der gesamten Disc oder der programmierten Titel in vorbestimmter Reihenfolge die [REPEAT]-Taste betätigen; die [REPEAT] Anzeige leuchtet.
2. Zur Abschaltung der Wiederholfunktion die [REPEAT]-Taste erneut betätigen.









Programmed play

e.g.: the 4th tune is played first, then the 2nd tune.

1. Press the [STOP (■)/CLEAR] button to set the player to the standby mode.
2. Press the [SKIP (▶▶|)] button to show 4 as a track number then press the [PROGRAM] button. When the 4th tune has been programmed, the play time of the 4th tune is displayed.
3. Press the [SKIP (|◀◀)] button to show 2 as a track number then press the [PROGRAM] button. When the 2nd tune has been programmed, the total play time of the 2nd and 4th tunes is displayed.
4. Press the [PLAY (▶)/PAUSE (❚❚)] button.
5. Then, play starts and proceeds in order of the programmed tunes — the 4th tune first and the 2nd tune next.

Notes:

- **A maximum of 15 programs can be selected from 99 tunes.**
- **When the total playing time of the programmed tunes exceeds 99 minutes 59 seconds, it is not displayed and only center bars are shown in the display.**
- **When the tune number to be programmed exceeds the 16th, the subsequent playing time indication shows only center bars.**
- **Since the total playing time of tunes programmed is displayed, it is convenient when recording tapes.**
- **During programmed play or in the pause mode, pressing the [SKIP (▶▶|)] button skips to the next tune in the programmed order.**
- **To stop temporarily during programmed play, press the [PLAY (▶)/PAUSE (❚❚)] button; press this button again to restart.**
- **When the programmed play is performed, the tune number programmed first and the total playing time of programmed tunes are displayed.**

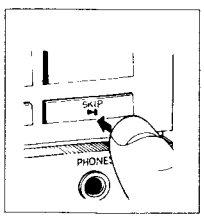
To check or correct the programmed tunes

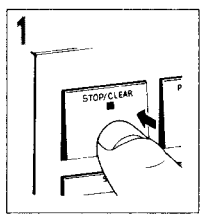
- **Checking the contents of the program**

  Each time the [SKIP (▶▶|)] button is pressed in the pause mode or after starting play, the tune numbers of the programmed tunes are displayed in turn.

- **Correcting a program**

1. To erase all the programmed musics, press the [STOP (■)/CLEAR] button to enter the disc to the stand-by state, and then press the [STOP (■)/CLEAR] button again.
2. To correct the contents of the program, erase the program in the same manner as in 1, and then restart programming from the beginning.





Programmierte Wiedergabe

Beispiel: Zuerst Wiedergabe des 4. Titels, dann des 2. Titels.

1. Die [STOP (■)/CLEAR]-Taste betätigen, um den player auf Betriebsbereitschaft zu stellen.
2. Die [SKIP (▶▶|)]-Taste betätigen, so daß Titelnummer 4 angezeigt wird, dann die [PROGRAM]-Taste betätigen. Nach Programmierung des 4. Titels wird dessen Spielzeit angezeigt.
3. Die [SKIP (|◀◀)]-Taste betätigen, so daß Titelnummer 2 angezeigt wird, dann die [PROGRAM]-Taste betätigen. Nach Programmierung des 2. Titels wird die Gesamtspielzeit von 4. und 2. Titel angezeigt.
4. Die [PLAY (▶)/PAUSE (❚❚)]-Taste betätigen.
5. Die Wiedergabe beginnt dann in der vorprogrammierten Reihenfolge - der 4. Titel also zuerst und danach der 2. Titel.

Hinweise:

- **Aus 99 Titeln können maximal 15 Programme gewählt werden.**
- **Überschreitet die Gesamtspielzeit der programmierten Titel 99 Minuten, 59 Sekunden, erfolgt keine Zeitanzeige, sondern es erscheinen Mittelstreifen im Display.**
- **Überschreitet die Zahl der zu programmierenden Titel den 16. Titel, erscheinen anstelle der Spielzeitangabe Mittelstreifen.**
- **Die Anzeige der Gesamtspielzeit ist bei Bandaufnahmen sehr hilfreich.**
- **Wird die [SKIP (▶▶|)]-Taste bei programmierter Wiedergabe oder in der Pausefunktion betätigt, erfolgt die Wiedergabe-Fortsetzung beim nächsten, programmierten Titel.**
- **Soll die programmierte Wiedergabe unterbrochen werden, die [PLAY (▶)/PAUSE (❚❚)]-Taste betätigen; zum erneuten Start diese Taste nochmals betätigen.**
- **Bei programmierter Wiedergabe ersheint die erste programmierte Titelnummer und die Gasamtspielzeit aller programmierter Titel im Display.**

Überprüfung und Korrektur der Programmierung

- **Überprüfung des Programminhalts**

  Bei Pausebetrieb oder nach Wiedergabestart bewirkt jedes Betätigen der [SKIP (▶▶|)]-Taste die Anzeige der programmierten Titel im Display.

- **Programmkorrektur**

1. Um alle programmierten Musikstellen zu löschen, die [STOP (■)/CLEAR]-Taste zu nächst einmal drücken, um den Compact Disc-Player in Bereitschaftsbetrieb zu setzen und anschließend die [STOP (■)/CLEAR]-Taste noch einmal drücken.
2. Zur Korrektur von Programminhalten, das Programm zunächst wie in Abschnitt 1 löschen und die gewünschten Stellen neu programmieren.

DISPLAY

❶ TOTAL lights when a disc has been loaded or during programming.
❷ The total number of tunes is displayed for about 3 seconds when a disc has been loaded and set for play. The track number of the current tune is displayed while a disc is being played.
❸ The elapsed playing time appears in minutes.
❹ The elapsed playing time appears in seconds.
❺ This mark lights in the pause mode.
❻ This mark lights when the REPEAT button is pressed.
❼ This mark lights during play.
❽ This mark lights during programming.

DISPLAY

❶ Die Anzeige TOTAL leuchtet auf, wenn eine Kompaktplatte geladen wurde, oder aber während des Programmierens.
❷ Nach Laden und Wiedergabeeinstellung einer Kompaktplatte wird die Anzahl der gesamten Titel 3 Sekunden lang im Anzeigefenster angegeben. Die Nummer des gegenwärtigen Titels wird während der Wiedergabe angezeigt.
❸ Die verstrichene Spielzeit wird in Minuten angegeben.
❹ Die verstrichene Spielzeit wird in Sekunden angegeben.
❺ Dieses Symbol leuchtet im Pausenbetrieb auf.
❻ Dieses Symbol leuchtet bei Betätigen der REPEAT-Taste auf.
❼ Dieses Symbol leuchtet während der Wiedergabe auf.
❽ Dieses Symbol leuchtet während des Programmierens auf.

TROUBLESHOOTING

What appears to be a malfunction may not always be serious.
Make sure first ...
The POWER is not applied even when the POWER button is pressed.
Is the power plug connected incorrectly?
— Connect the power plug firmly and correctly.
The search does not start even if the disc platter is retracted.
Is the disc upside down?
— Load the disc with the label facing up.
Is the disc dirty?
— Clean the surface of the disc.
Refer to "Maintenance of discs" on page 7.
Are there scratches on the surface of the disc?
— Change the disc.
Are the holder and screws for transportation removed?
— Remove them referring to BEFORE USE on page 7.

STÖRUNGSSUCHE

Nicht jede Störung ist auf einen Schaden zurückzuführen.
Zuerst überprüfen ...
Die POWER-Anzeige leuchtet nicht, obwohl die POWER-Taste gedrückt wurde.
Ist das Netzkabel nicht korrekt angeschlossen?
— Das Netzkabel fest und richtig anschließen.
Der Suchlauf startet nicht, obwohl der Disc-Halter eingefahren ist.
Liegt die Compact-Disc verkehrt herum in der Halterung?
— Die Compact-Disc richtig, mit der Etikettenseite nach oben einlegen.
Ist die Compact-Disc verschmutzt?
— Die Oberfläche reinigen.
Siehe "Pflege von Compact-Discs" auf Seite 7.
Ist die Compact-Disc verkratzt?
— Eine andere Compact-Disc einlegen.
Sind Halter und Transportschrauben abgenommen?
— Entfernen Sie sie gemäß den Angaben unter VOR DEM BETRIEB auf Seite 7.

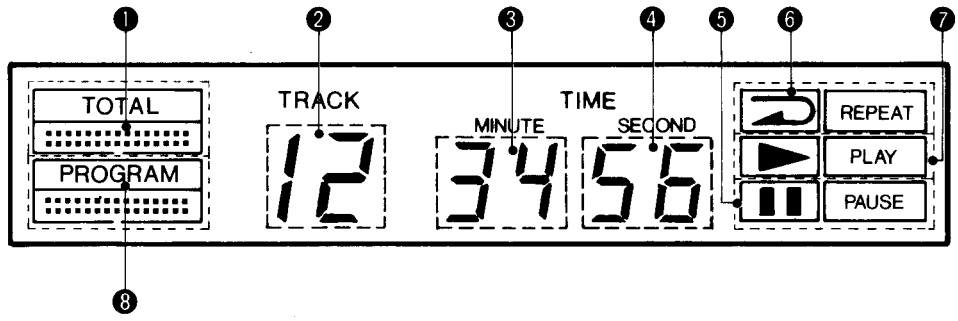


Fig. 8
Abb. 8
Afb. 8

AFFICHAGE

❶ TOTAL s'allume lorsqu'un compact disc vient d'être chargé ou lors de la programmation.
❷ Le nombre total de morceaux est affiché pendant 3 secondes environ lorsqu'un compact disc vient d'être chargé et qu'il est prêt pour la lecture. Le numéro du morceau en cours est affiché lorsque le compact disc est en cours de lecture.
❸ Le temps de lecture écoulé apparaît en minutes.
❹ Le temps de lecture écoulé apparaît en secondes.
❺ Ce repère s'allume dans le mode de pause.
❻ Ce repère s'allume lorsqu'on a appuyé sur la touche de répétition (REPEAT).
❼ Ce repère s'allume pendant la lecture.
❽ Ce repère s'allume pendant la programmation.

DISPLAY

❶ Totaal (TOTAL) licht op na het plaatsen van een disc en tijdens programmeren.
❷ Nadat een compact disc is geplaatst en het apparaat is ingesteld voor weergave zal het totale aantal muziekstukken op de disc voor ongeveer 3 sekonden worden aangegeven. Tijdens het afspelen van de disc wordt het nummer van het muziekstuk aangegeven dat op dat moment wordt afgespeeld.
❸ Geeft de minuten van de verstreken speelduur aan.
❹ Geeft de sekonden van de verstreken speelduur aan.
❺ Dit teken licht tijdens pauze op.
❻ Dit teken licht op als de herhaaltoets (REPEAT) wordt ingedrukt.
❼ Dit teken licht tijdens weergeven op.
❽ Dit teken licht tijdens programmeren op.

VISUALIZACION

❶ La indicación TOTAL se ilumina cuando se ha colocado un disco o durante la programación.
❷ La presentación visual muestra, por aproximadamente 3 segundos, el número total de piezas musicales, cuando se ha colocado un disco y se inicia su reproducción. Mientras se está reproduciendo el disco, la presentación visual muestra el número de la pieza musical en curso.
❸ El tiempo transcurrido en la reproducción, se visualiza en minutos.
❹ El tiempo transcurrido en la reproducción, se visualiza en segundos.
❺ Esta indicación se ilumina en el modo de pausa.
❻ Esta indicación se ilumina cuando se presiona el botón de repetición (REPEAT).
❼ Esta indicación se ilumina durante la reproducción.
❽ Esta indicación se ilumina durante la programación.

EN CAS DE DIFFICULTE

Ce qui semble au départ être un mauvais fonctionnement n'est pas toujours très sérieux. Assurez-vous d'abord que ...
L'alimentation n'est pas fournie même quand la touche POWER est enfoncée.
La prise est-elle correctement branchée?
— La brancher fermement et correctement.
La recherche ne commence pas même si le plateau est rétracté.
Le disque est-il sens dessus dessous?
— Le mettre en place avec son label dirigé vers le haut.
Le disque est-il sale?
— Nettoyer sa surface.
Se référer à "Entretien des disques", page 8.
Y a-t-il des rayures sur la surface du disque?
— Changer le disque.
Est-ce que les supports et vis de transport sont retirés?
— Les retirer en se reportant à AVANT UTILISATION, page 7.

VERHELPEN VAN STORINGEN

Storingen duiden niet altijd op defecten. Kontroleer eerst de onderstaande storingstabel ...
Geen netspanning zelfs wanneer de net-schakelaar (POWER) is ingedrukt.
Is de stekker juist op het stopkontakt aangesloten?
— De stekker stevig en juist aandrukken.
Opsporingsfunktie werkt niet zelfs wanneer het plateau ingetrokken is.
Light de disk op zijn kop?
— De disk met het label naar boven gericht inleggen.
Is de disk vuil?
— Maak de disk schoon.
Verwijs naar "Onderhoud van disks" op blz. 8.
Is het oppervlak van de disk bekrast?
— Vervang de disk.
Zijn de transporthouder en -schroeven verwijderd?
— Verwijder deze onderdelen zoals beschreven in ALVORENS HET IN GEBRUIK NEMEN op blz. 7.

DETECCION DE PROBLEMAS

Aquello que parece una falla no siempre lo es. Asegúrese primero ...
El aparato no se enciende al activar el conmutador POWER.
¿Está el cordón de alimentación incorrectamente conectado?
— Conéctelo firmemente y correctamente.
La búsqueda no es posible aunque el plato esté adentro.
¿Está el disco al revés?
— Póngalo con el rótulo hacia arriba.
¿Está el disco sucio?
— Límpielo.
Refiérase a "Mantenimiento de los discos" en la página 8.
¿Está el disco rayado?
— Cámbielo.
¿Están asegurados los tornillos de embalaje?
— Aflójelos (refiérase a "ANTES DEL USO").
¿Ha retirado el sujetador y los tornillos utilizados para el transporte?
— Retírelos de acuerdo con las instrucciones en ANTES DEL USO, de la página 7.

SPECIFICATIONS

System	:	Compact disc player
Signal detection system	:	Non-contact optical system pickup
Number of channels	:	2 channels
Frequency response	:	5 Hz — 20,000 Hz
Dynamic range	:	95 dB (1 kHz)
Signal/noise ratio	:	98 dB
Channel separation	:	90 dB (1 kHz)
Total Harmonic Distortion	:	0.004%
Wow and flutter	:	Less than measurable limit
Output level	:	2.0 Vrms (full scale)
Number of program steps	:	15 steps
Power source	:	Refer to the table on back page.
Power consumption	:	Refer to the table on back page.
Dimensions	:	435(W) x 83(H) x 291(D) mm (17-2/16" x 3-5/16" x 11-7/16")
Weight	:	3.9 kg (8.6 lbs)
Accessories	:	Signal cord ..... 1 Remote cable (1m) 1

Design and specifications subject to change without notice

TECHNISCHE DATEN

System	:	Compact-Disc-Player
Signal-Abtastsystem	:	Kontaktloser optischer Abnehmer
Anzahl der Kanäle	:	2
Frequenzbereich	:	5 Hz — 20,000 Hz
Dynamikbereich	:	95 dB (1 kHz)
Signalrauschabstand	:	98 dB
Kanaltrennung	:	90 dB (1 KHz)
Klirrfaktor	:	0.004%
Gleichlaufschwankungen	:	Unterhalb der Meßgrenze
Ausgangsleistung	:	2.0 V (Maximal-Einstellung)
Programmschritte	:	15
Spannungsversorgung	:	Siehe Tabelle auf der letzten Seite
Leistungsaufnahme	:	Siehe Tabelle auf der letzten Seite
Abmessungen	:	435(B) x 83(H) x 291(T) mm
Gewicht	:	3,9 kg
Zubehör	:	Signalkabel ..... 1 Fernbedienkabel (1 m).....1

Technische Änderungen vorbehalten.

POWER SPECIFICATIONS

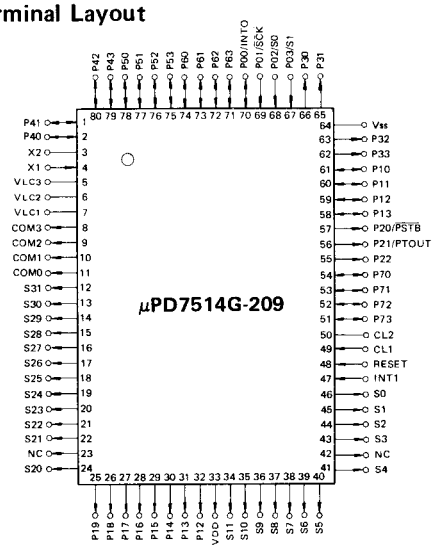
Areas	Line Voltage & Frequency	Power Consumption
U.S.A.	AC120V~, 60Hz	15 watts
Canada		
Continental Europe	AC220V~, 50Hz	
U.K.	AC240V~, 50Hz	
Australia		
Other areas	AC110/120/220/240V~ selectable, 50/60Hz	

■ IC201: μPD7514G-209

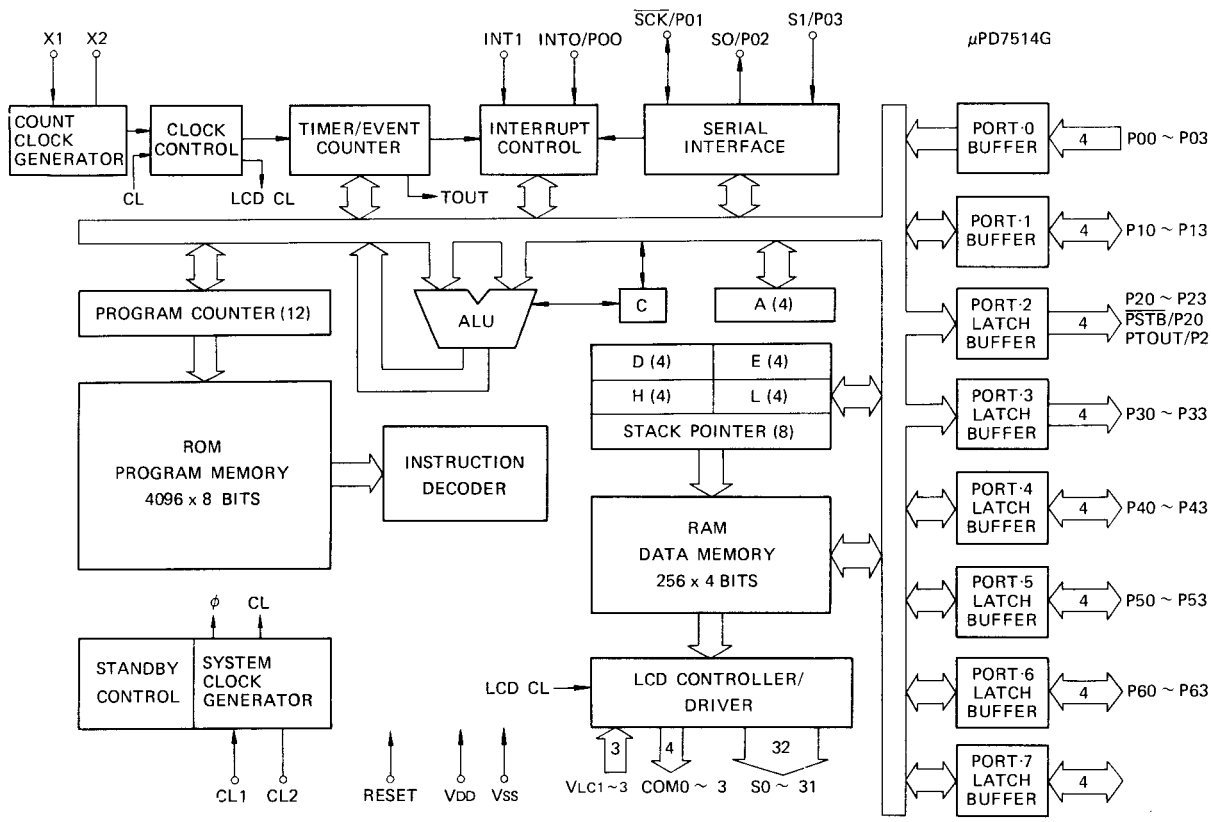
(1) Outline:

This IC is a C-MOS 4-bit single chip microcomputer, consisting of 4096 wrod x 8-bit ROM, 256 digit x 4-bit RAM, In/Out circuit, timer/counter and serial interface.
Its main function is to accept signals from the operation switches, input/output DCS signals, control the display LCD and output operation commands to the servo control LSI.

(2) Terminal Layout



(3) Internal Block Diagram



(4) Key Matrix

		3 <P43>	2 <P42>	1 <P41>	0 <P40>
0	<P30>	OPEN CLOSE	–	STOP CLEAR	PLAY PAUSE
1	<P31>	– –	– –	SKIP L	SKIP R
2	<P32>	– –	– –	MANUAL SEARCH L	MANUAL SEARCH R
3	<P33>	– –	– –	PROGRAM	REPEAT

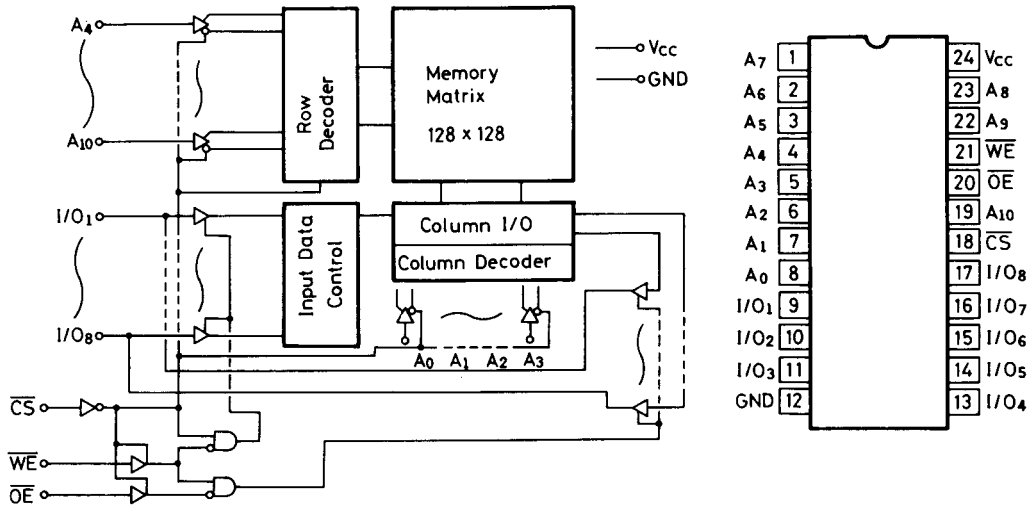
(5) Pin Functions of IC201: μPD7514G-209

Pin No.	Pin Name	I/O	Active	Function
1	P41	I	H	Key matrix input 1
2	P40	I	H	Key matrix input 2
3	NC	–	–	Not used (open)
4	NC	–	–	Not used (Vss)
5	VLC 3	–	–	LCD power supply
6	VLC 2	–	–	LCD power supply
7	VLC 1	–	–	LCD power supply
8	NC	–	–	Not used (open)
9	NC	–	–	Not used (open)
10	COM 1	O	H	Common output 1
11	COM 0	O	H	Common output 2
12	NC	–	–	Not used (open)
≀	≀	≀	≀	≀
19	NC	–	–	Not used (open)
20	S23	O	H	Segment 23 output
≀	≀	≀	≀	≀
22	S21	O	H	Segment 21 output
23	NC	–	–	(open)
24	S20	O	H	Segment 20 output
≀	≀	≀	≀	≀
32	S12	O	H	Segment 12 output
33	Vdd	–	–	+5V power supply
34	S11	O	H	Segment 11 output
≀	≀	≀	≀	≀
41	S4	O	H	Segment 4 output
42	NC	–	–	(open)
43	S3	O	H	Segment 3 output
≀	≀	≀	≀	≀
46	S0	O	H	Segment 0 output
47	INT 1	I	–	Not used (Vss)
48	RESET	–	H	Reset input (Active H)
49	CK2	–	–	C-R oscillator

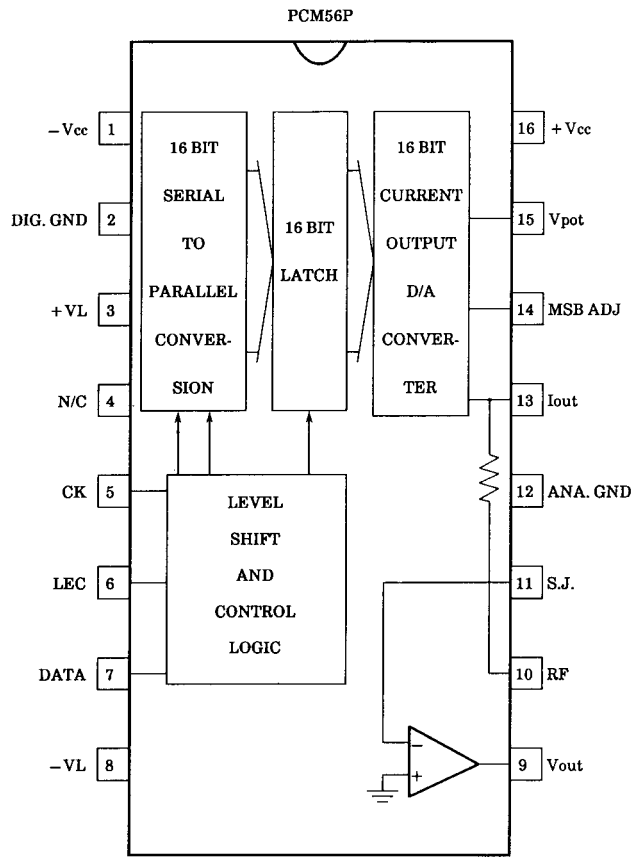
Pin No.	Pin Name	I/O	Active	Function
50	CK1	–	–	C-R oscillator
51	NC	–	–	Not used (open)
52	NC	–	–	Not used (open)
53	NC	–	–	Not used (open)
54	P70	O	L	LCD power supply
55	P22	O	H	TLOF
56	P21	O	H	GU
57	P20	O	H	YM3815 connect R/W
58	P13	I	H	YM3815 connect WQ
59	P12	I	L	Test 2 clock signal output (Pull-up)
60	P11	I	L	Test 1 time output OFF (Pull-up)
61	P10	–	–	GND
62	P33	O	H	Key matrix output 3
63	P32	O	H	Key matrix output 2
64	Ugg	–	–	GND
65	P31	O	H	Key matrix output 1
66	P30	O	H	Key matrix output 0
67	P03	–	H	SVC connect D-OUT
68	P02	O	H	SVC connect D-IN
69	P01	O	L	SVC connect SCK
70	P00	–	–	Not used (Vss)
71	P63	O	H	Laser ON (Active H)
72	P62	O	H	Close output
73	P61	O	H	Open output
74	P60	O	L	DCS output (Active L)
75	P53	I	H	Rest switch
76	P52	I	H	Open switch
77	P51	I	H	Close switch
78	P50	I	L	DCS input (Active L)
79	P43	I	H	Key matrix input 3
80	P42	I	H	Key matrix input 2

Other LSI ICs and Internal Block Diagrams

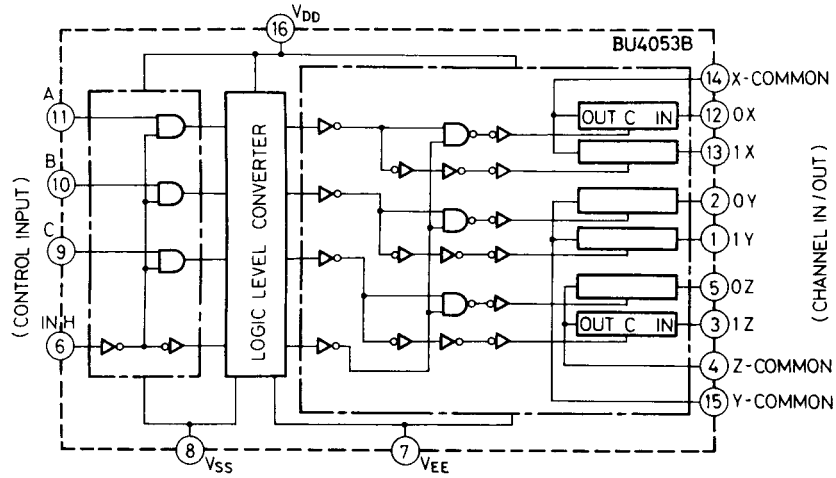
IC302: MB8416A-15L-SK (Static RAM)



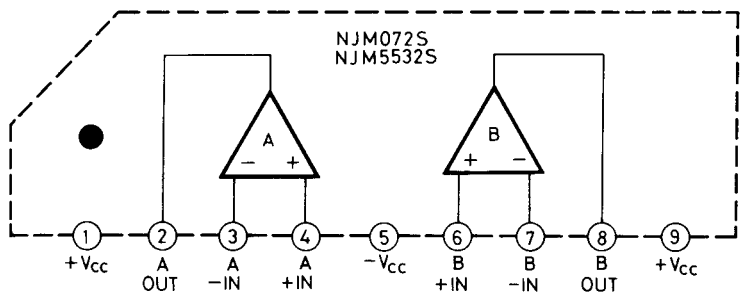
IC303: PCM56P (D/A converter)



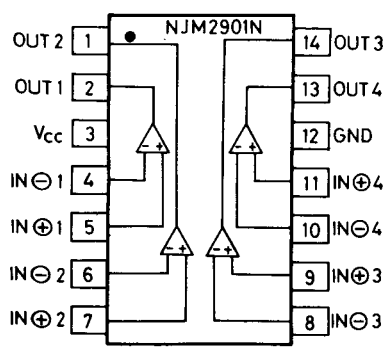
IC304: BU4053B (Analog SW, Multiplexer)



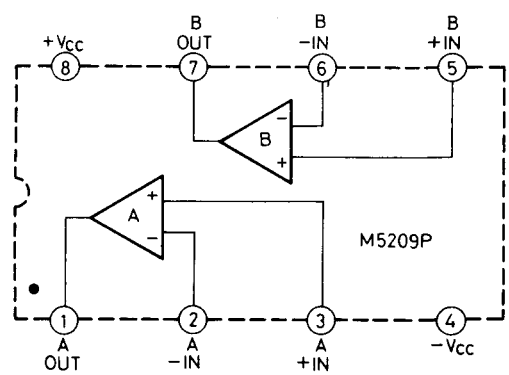
IC501: NJM072S (Dual op amp)



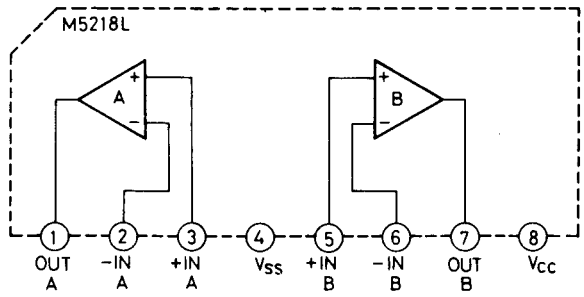
IC502: NJM2901N (Quad comparator)



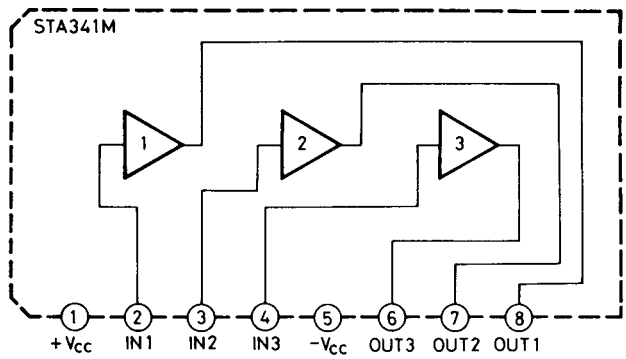
IC401: M5209P (Dual op amp)



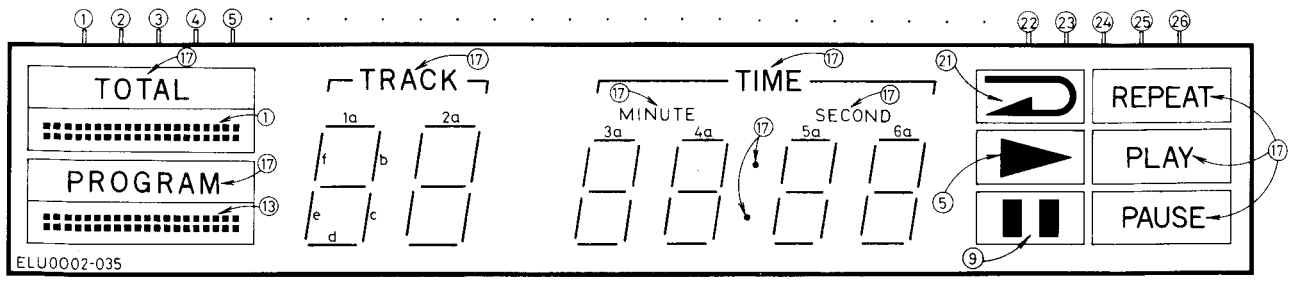
IC251, IC306, IC307, IC503, IC802, IC851:
M5218L (Dual op amp)



IC801: STA341M (Driver array)



LC201: ELU0002-035
(Liquid crystal display)



Pin No.	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬
COM0	1a	1f	1d	1e	2a	2f	2d	2e	3a	3f	3d	3e	4a
COM1	TOTAL	1b	1c	1g	►	2b	2c	2g	▮▮	3b	3c	3g	PROG.

Pin No.	⑭	⑮	⑯	⑰	⑱	⑲	⑳	㉑	㉒	㉓	㉔	㉕	㉖
COM0	4f	4d	4e	5a	5f	5d	5e	6a	6f	6d	6b	COM0	——
COM1	4b	4c	4g	Constant light-on	5b	5c	5g	⮌	6b	6c	6g	——	COM1

Disassembly Procedures

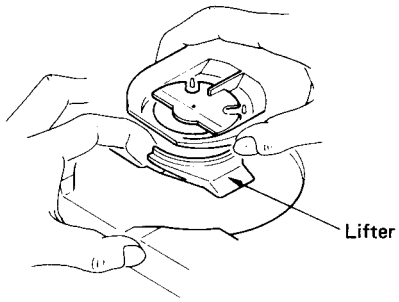
(1) Metal cover removal

1. Remove the five screws.
2. Remove the metal cover by lifting its top and pulling it backwards at an angle to the rear and up.

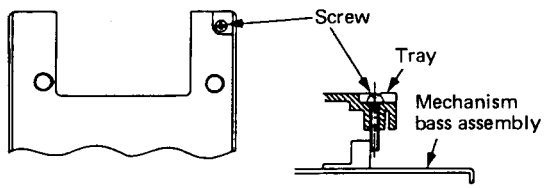
(2) Tray assembly removal

1. Remove the metal cover.
2. Turn the power on and press the OPEN/CLOSE switch to move out the tray. After this, turn the power off.

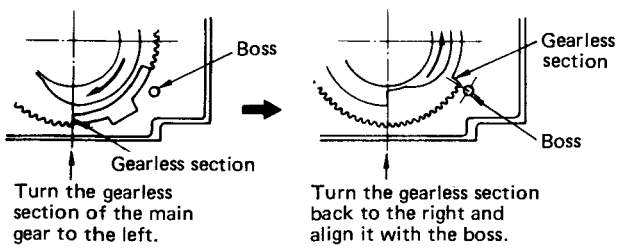
*If the power cannot be turned on due to a malfunction, pull out the tray while forcibly raising the lifter.



3. Remove the tray stopper screw and remove the tray by pulling it toward you.

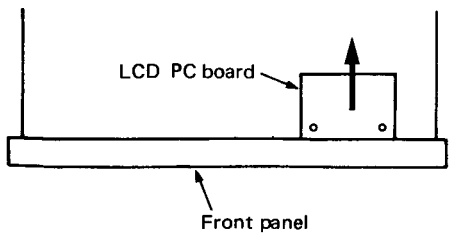


4. When reassembling, first turn the gearless section of the main gear to the left, then turn it back to the right and align it with the boss on the mechanism bass ass'y (by visual inspection) before installing the tray.


Boss
Gearless section
Turn the gearless section of the main gear to the left.
Gearless section
Boss
Turn the gearless section back to the right and align it with the boss.

(3) LCD printed circuit board removal

1. Remove the two plastic rivets.
2. Remove the LCD PC board by sliding it backwards.
3. Be careful not soil the LCD surface by touching it.

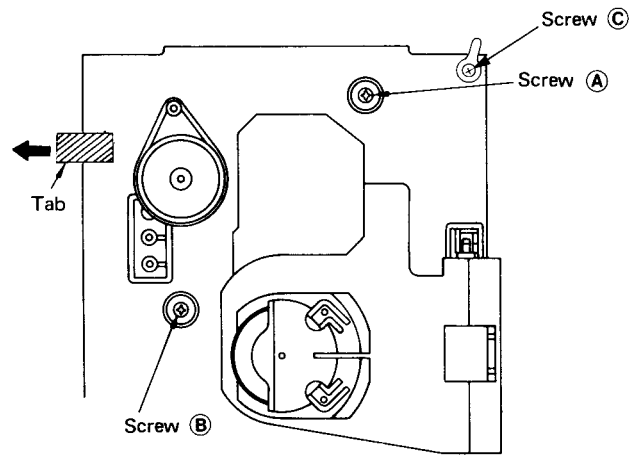


(4) Front panel assembly removal

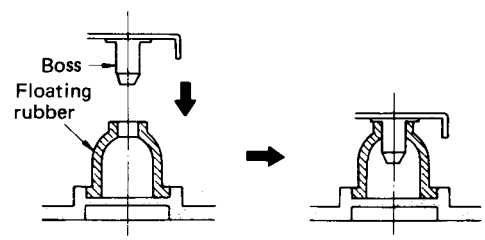
1. Remove the tray assembly.
2. Remove the two plastic rivets on the top of the front panel.
3. Remove the three screws on the bottom of the front panel.
4. Remove the LCD PC board and front PC board.

(5) Mechanism assembly removal

1. Remove the tray.
2. Remove the three screws Ⓐ, Ⓑ and Ⓒ.

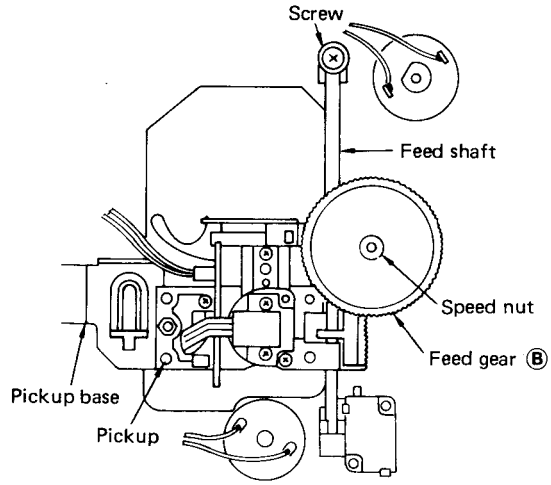


3. Disconnect the connectors.
4. Release the tab on the left side of the chassis, lift the mechanism ass'y straight up then slide it backward to remove it.
5. Make sure that the four bosses at the rear of the mechanism ass'y are correctly inserted into the floating rubbers on the chassis when the assembly is re-installed. (Confirm that the mounting bosses of screws (A) and (B) come to the centers of the holes in the chassis.) It is particularly important that the front right part is secured correctly.



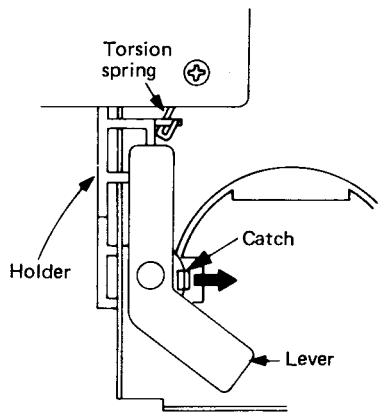
(6) Laser pickup removal

1. Remove the speed nut and remove the feed gear Ⓑ.
2. Remove the feed shaft lock screw and remove the feed shaft with the pickup.
3. Remove the pickup from the pickup base.

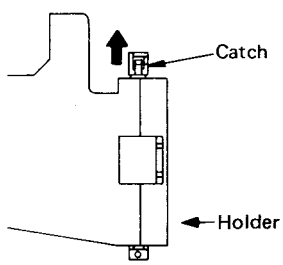


(7) Spindle motor removal

1. Remove the tray assembly.
2. Remove the lever. The lever can be extracted by pulling it upward while pushing the catch (shown in the figure below) in the direction of the arrow.

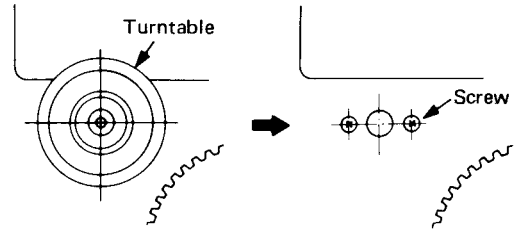


3. Remove the holder.



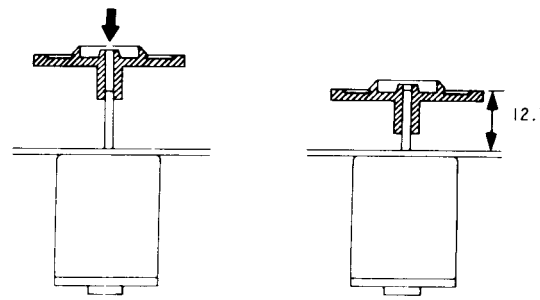
Note: After the holder has been re-installed, mount the torsion spring correctly.

4. Remove the turntable and remove the two screws.

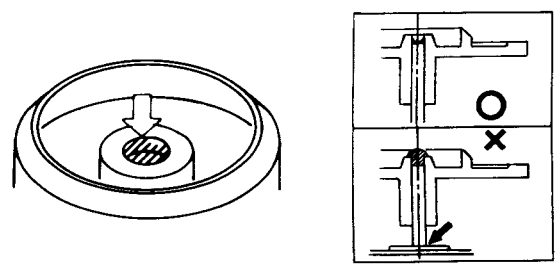


Note: Installation of the spindle motor

1. Secure the two screws applying uniform tightening torque.
2. Insert the turntable by pressing it.
   The turntable must be inserted straight while supporting the motor at its lowest section; alignment must be accurate to obtain a height of 12.7 mm above the top surface of the mechanism base.

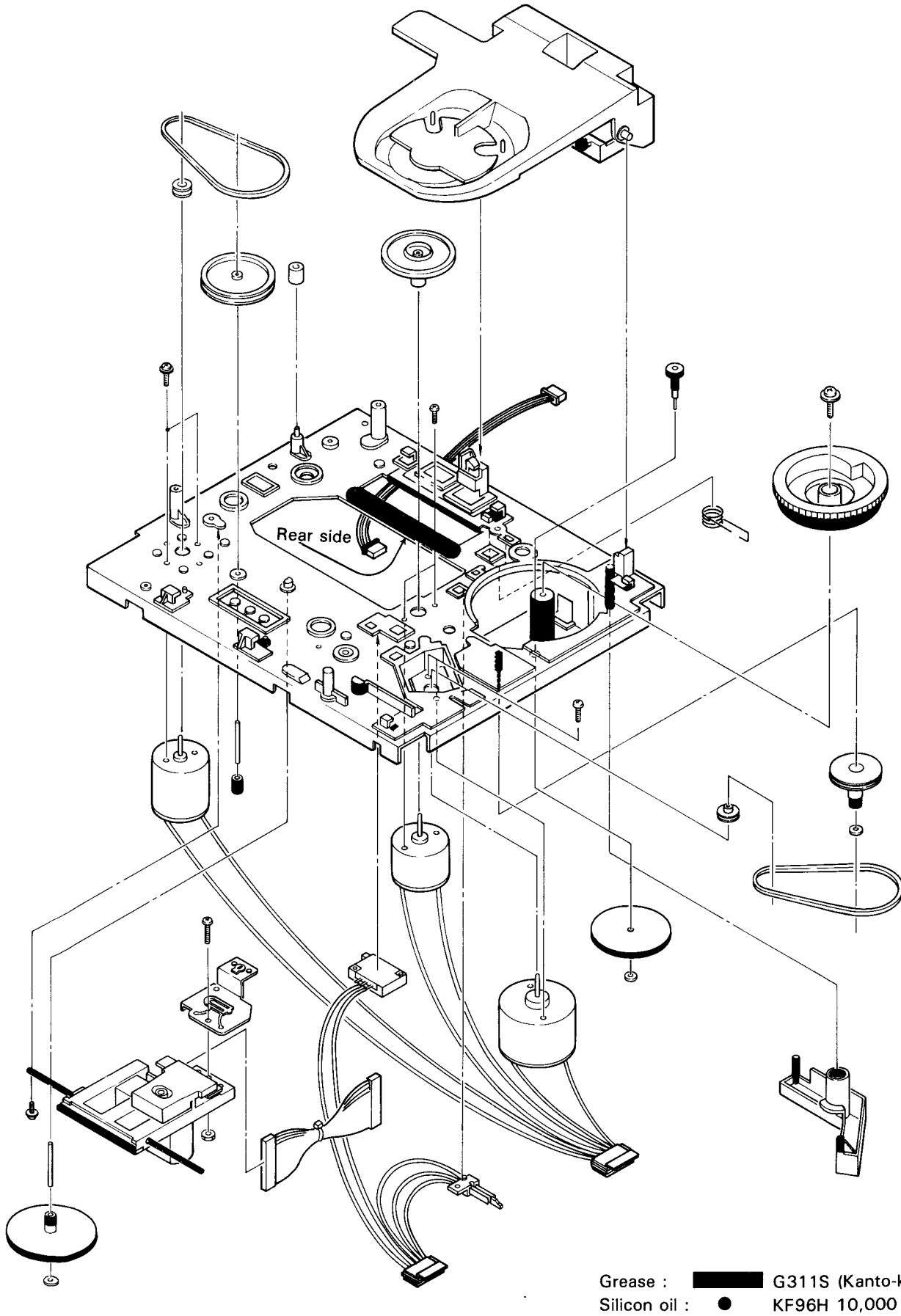


3. After pressure insertion is complete, bond the motor shaft and turntable together (at the section marked by an arrow in the figure on the left below).



Use "LOCTITE #460" bonding agent and limit the amount applied to a minimum. Take care not to allow excess bonding agent to get onto the turntable, as shown in the figure below. Be extremely careful not to allow bonding agent to adhere to the motor bearings (section marked by an arrow in the figure on the right above.)

Application Points for Grease



Maintenance of Laser Pickup

(1) Service life of the laser pickup

- **When measuring with a laser power meter**

1. Remove the flat wires from sockets P801 and P802 on the main PC board.
2. Connect the pin ② (LON) of P802 to +5 V line.
3. Turn the power on and measure the power of the pick-up laser.

- **When a laser power meter is not available**

1. Turn the power on and load a disc.
2. Press the PLAY button to start playing.
3. Connect an oscilloscope to TP3 (RF), and measure the EFM output.

- When the measured value is as shown in the table below, replace the pickup because the service life of the laser diode is judged as having expired.

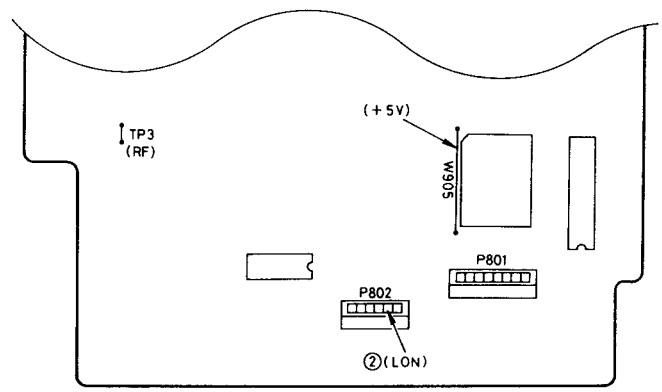
Measurement value	Measurement instrument	Measured value
Laser power	Laser power meter	Less than 0.1 mW
EFM output (Amplitude of eye pattern)	Oscilloscope	Less than 1.0 V

(2) Semifixed resistor on the APC board

The semifixed resistor on the APC board installed with the pickup is used to adjust the laser power. Do not touch this semifixed resistor because this adjustment should be performed as part of a pair of adjustments to match the characteristics of the optical block.
If the laser power is too low, replace the pickup since the service life of the laser diode has expired. Turning the semifixed resistor with a normal pickup may damage the pickup because of overcurrent.

(3) Grating adjustment

Since all parts have been carefully adjusted in assembly, grating adjustment is not required.
As parts can become badly adjusted due to careless operation, the laser beams will mistrack and sound reproduction may become impossible.



– Continued from P1-17 (Adjustment Procedures) –

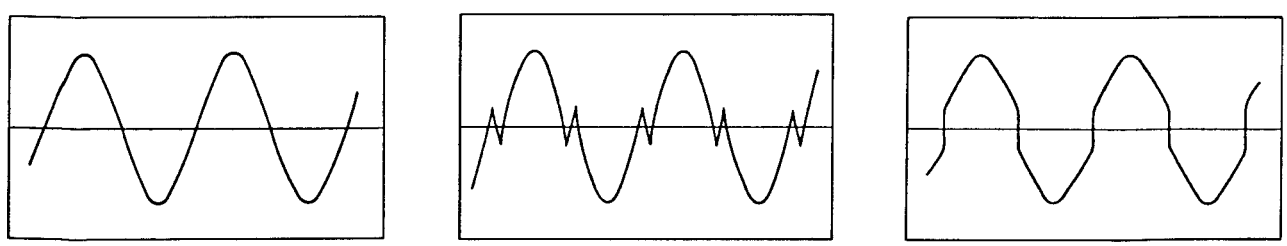
(7) Audio circuit adjustment (Zero-cross distortion)

1) Adjustment instruments
Oscilloscope, Test disc (CRG1106)
2) Adjustment procedure
1. Play the 9th track (1 kHz, -60 dB) of the test disc.
2. Adjust R309 so that the reproduced waveform becomes the specified sine wave. (Refer to the figure below.)

Note: This adjustment has been added during production of the player, to improve the characteristics such as the distortion rate, dynamic range and separation, etc.

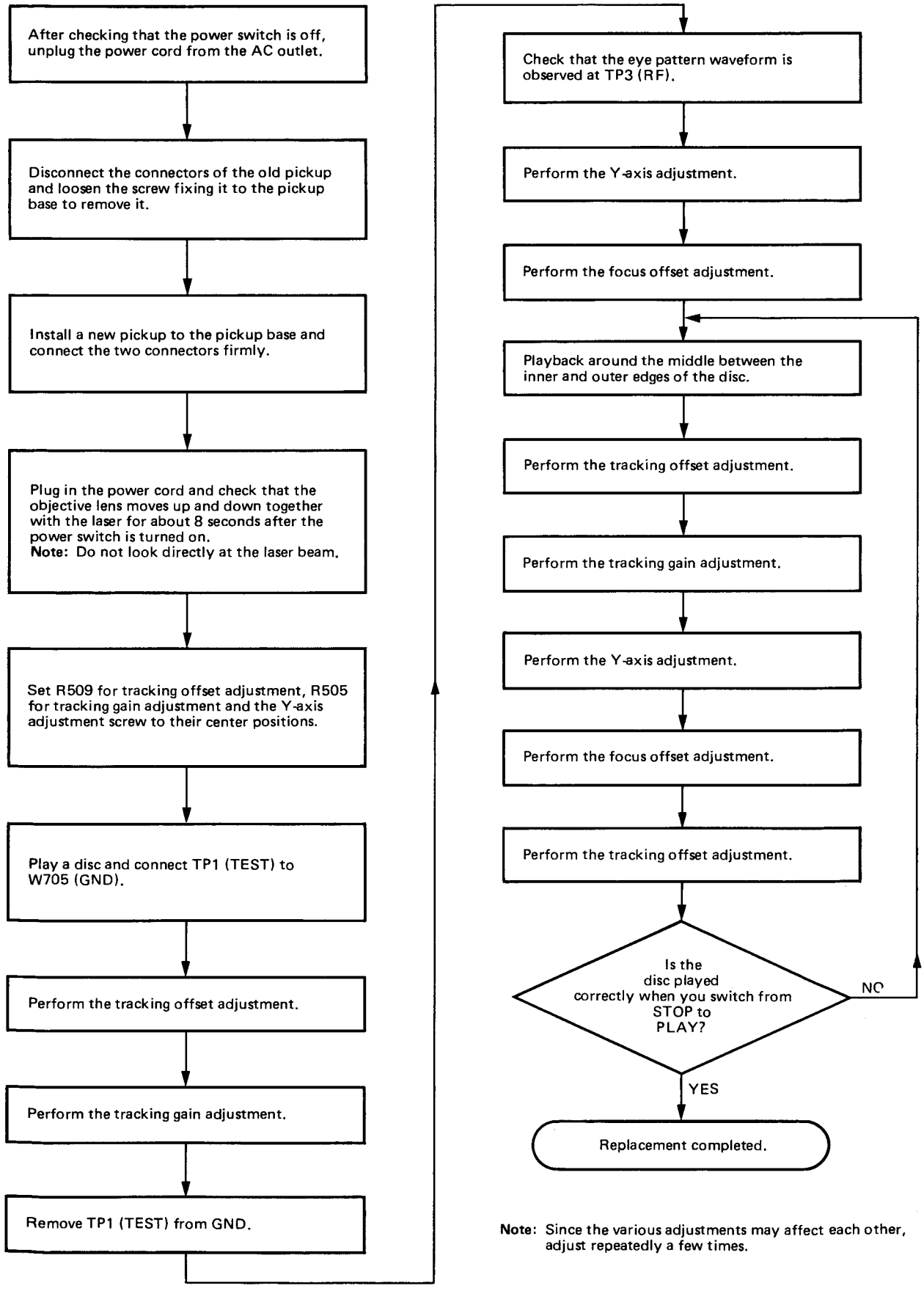
Refer to the circuit diagram of the amplifier with a gain of 60 dB in the Service Manual of the XL-V1100BK (No. 2932) if necessary.

- **Zero-cross distortion waveform**



OK NG NG

Replacement of Laser Pickup


After checking that the power switch is off, unplug the power cord from the AC outlet.
Disconnect the connectors of the old pickup and loosen the screw fixing it to the pickup base to remove it.
Install a new pickup to the pickup base and connect the two connectors firmly.
Plug in the power cord and check that the objective lens moves up and down together with the laser for about 8 seconds after the power switch is turned on.
Note: Do not look directly at the laser beam.
Set R509 for tracking offset adjustment, R505 for tracking gain adjustment and the Y-axis adjustment screw to their center positions.
Play a disc and connect TP1 (TEST) to W705 (GND).
Perform the tracking offset adjustment.
Perform the tracking gain adjustment.
Remove TP1 (TEST) from GND.
Check that the eye pattern waveform is observed at TP3 (RF).
Perform the Y-axis adjustment.
Perform the focus offset adjustment.
Playback around the middle between the inner and outer edges of the disc.
Perform the tracking offset adjustment.
Perform the tracking gain adjustment.
Perform the Y-axis adjustment.
Perform the focus offset adjustment.
Perform the tracking offset adjustment.
Is the disc played correctly when you switch from STOP to PLAY?
NO
YES
Replacement completed.

Note: Since the various adjustments may affect each other, adjust repeatedly a few times.

Adjustment Procedures

(1) PLL freerunning adjustment

1) Adjustment instrument
   Frequency counter
2) Adjustment procedure
   1. Remove the tray assembly. (Refer to item (2) on page 1-12.)
   2. Connect a frequency counter between TP6 (CK) and W705 (GND) on the main PC board.
   3. Short TP3 (RF) and W705 (GND).
   4. Using the alignment rod, adjust L401 for a frequency counter reading of 4.332±0.001 MHz.
   5. Perform this adjustment immediately after the power is turned on.

(2) Clock frequency adjustment

1) Adjustment instrument
   Frequency counter
2) Adjustment procedure
   1. Remove the LCD PC board. (Refer to item (3) on page 1-12.)
   2. Connect TEST2 (R206) on the LCD PC board to GND.
   3. Connect a frequency counter between SCK (FW202 pin ③) and GND.
   4. Turn the POWER switch ON.
   5. Adjust R204 located on the LCD PC board so that the value indicated by the frequency counter becomes 200 kHz ±4 kHz.
   6. Turn the POWER switch OFF.
   7. Disconnect TEST2 (R206) from GND pin.

(3) Y-axis adjustment

1) Adjustment instruments
   Oscilloscope, Flat-bladed screwdriver, Normal disc
2) Adjustment procedure
   1. Remove the tray assembly. (Refer to item (2) on page 1-12.)
   2. Connect an oscilloscope between TP3 (RF) and W705 (GND) on the main PC board.
   3. Play the disc.
   4. Turn the Y-axis adjusting screw located on the pick-up base so that the amplitude of the RF signal (waveform on the oscilloscope) becomes maximum with the clearest possible waveform.

(4) Focus offset adjustment

1) Adjustment instruments
   Oscilloscope, Normal disc
2) Adjustment procedure
   1. Connect an oscilloscope between TP3 (RF) and W705 (GND) on the main PC board.
   2. Play the disc.
   3. Adjust R555 so that the amplitude of the RF signal (waveform on the oscilloscope) becomes maximum with the clearest possible waveform.

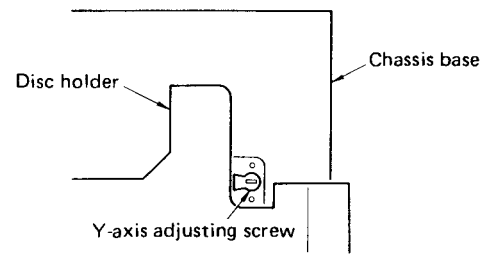
(5) Tracking gain adjustment

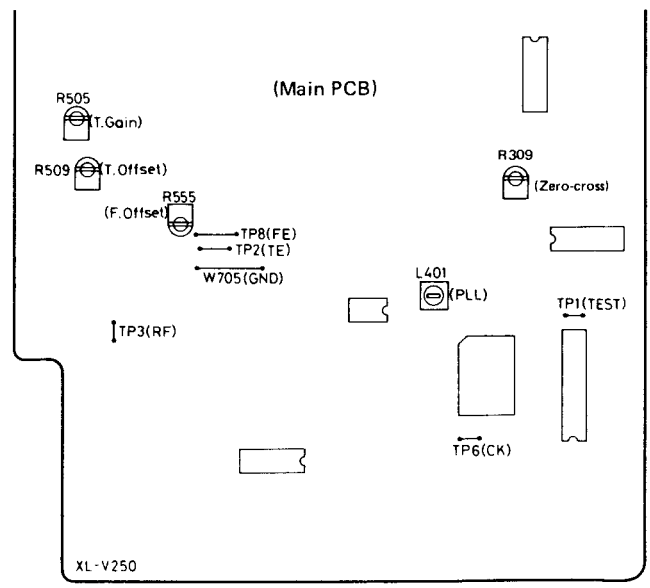
1) Adjustment instruments
   Oscilloscope, Normal disc
2) Adjustment procedure
   1. Connect an oscilloscope between TP2 (TE) and W705 (GND) on the main PC board.
   2. Play the disc.
   3. Short TP1 (TEST) to W705 (GND).
   4. Adjust R505 so that the tracking error signal (waveform on the oscilloscope) is 2 Vp-p.

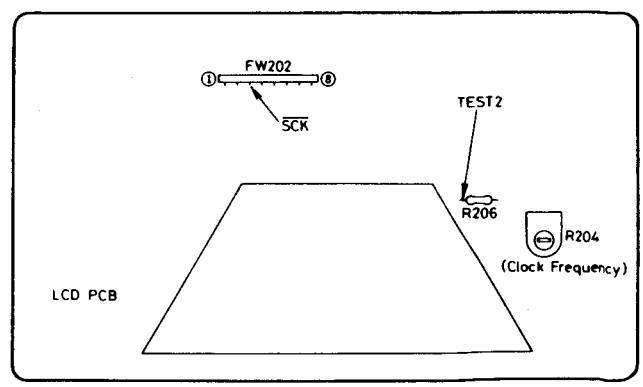
(6) Tracking offset adjustment

1) Adjustment instruments
   Oscilloscope, Normal disc
2) Adjustment procedure
   1. Connect an oscilloscope between TP2 (TE) and W705 (GND) on the main PC bord.
   2. Play the disc.
   3. Short TP1 (TEST) to W705 (GND).
   4. Adjust R509 so that the DC level of the tracking error signal (waveform on the oscilloscope) becomes 0.

   Note: Adjust R509 so that the waveform becomes symmetrical around the 0 level.



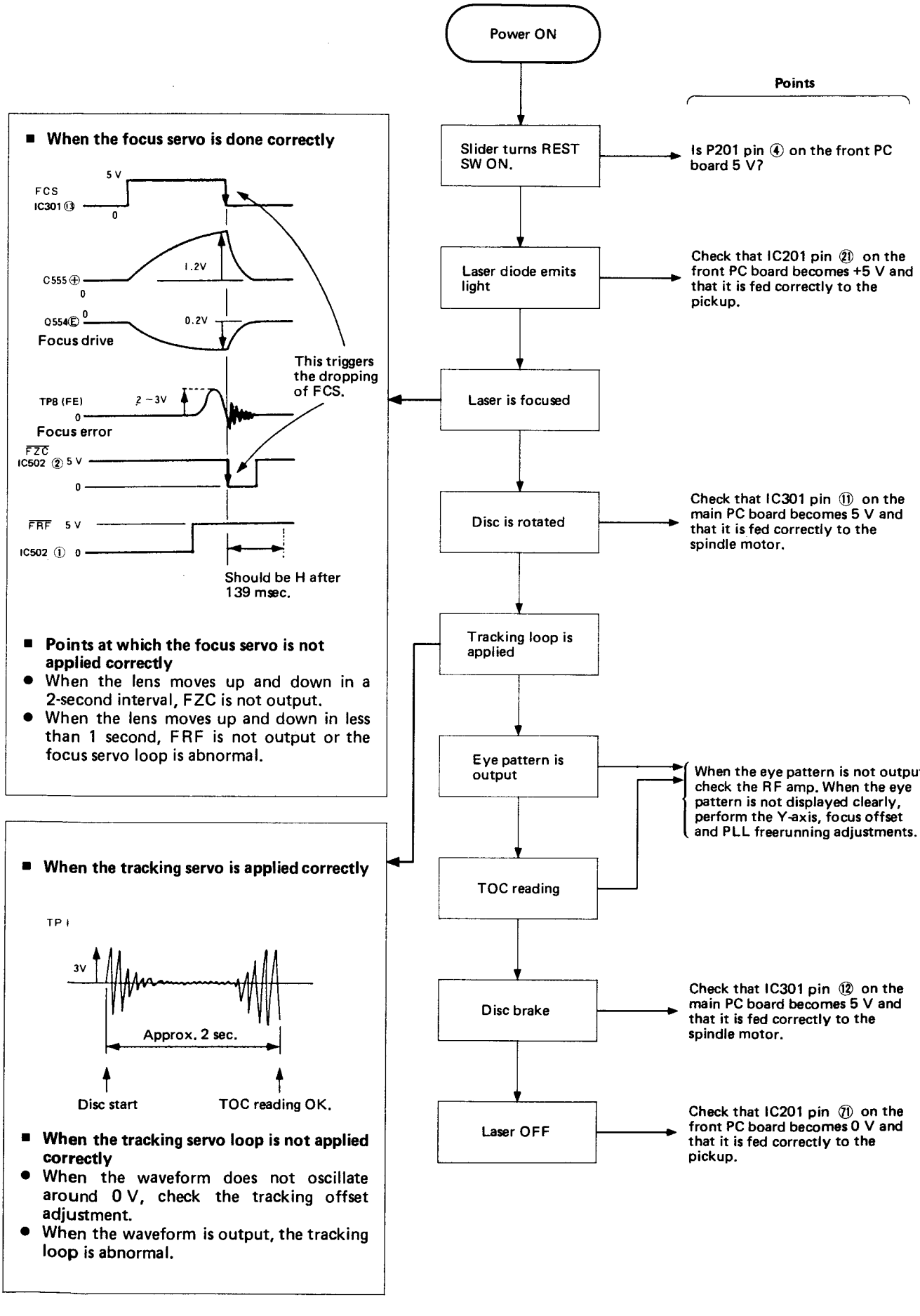




(7) Audio circuit adjustment (Zero-cross distortion)

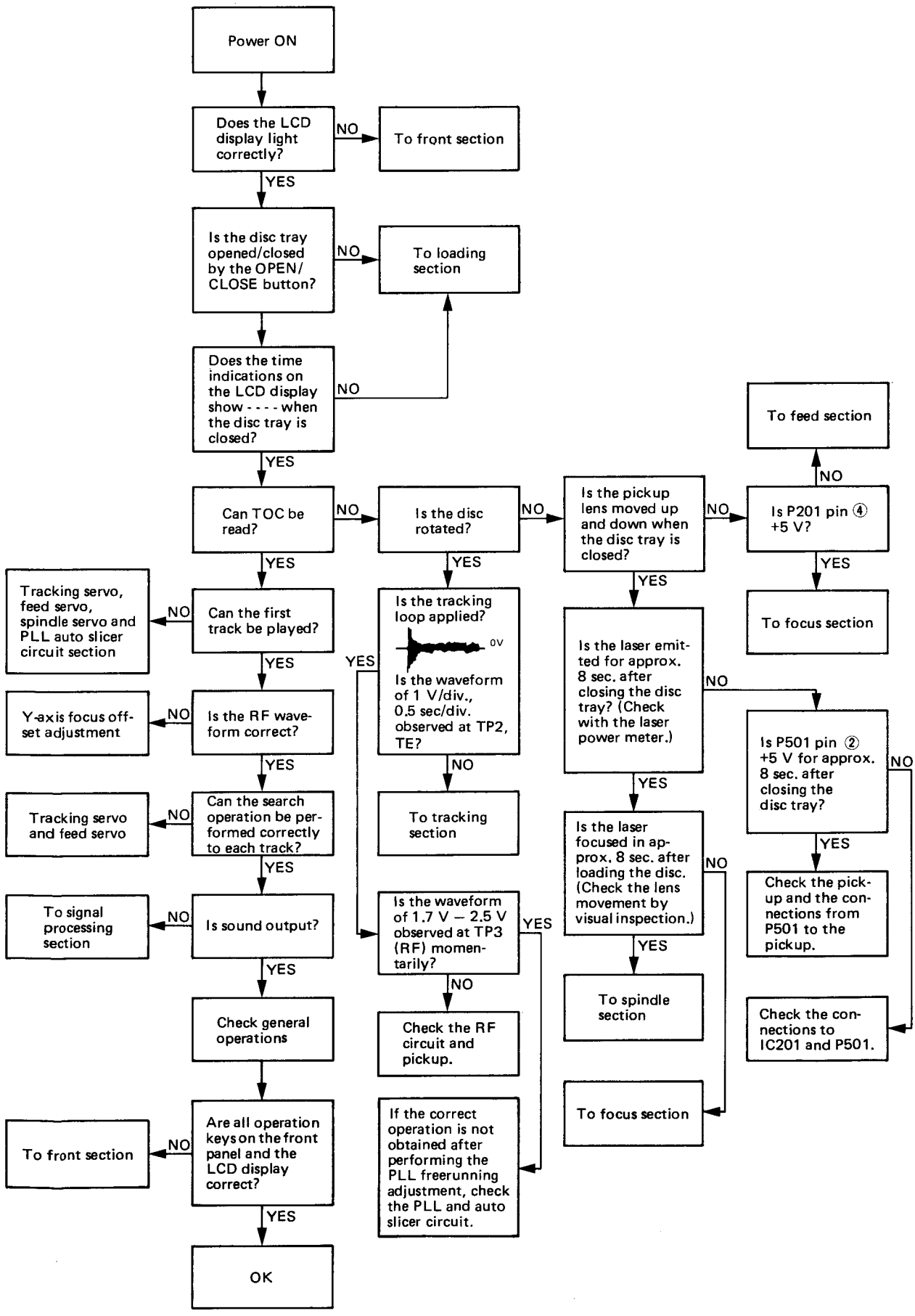
- Refer to page 1-15.

Flow of Operation Until TOC is Read

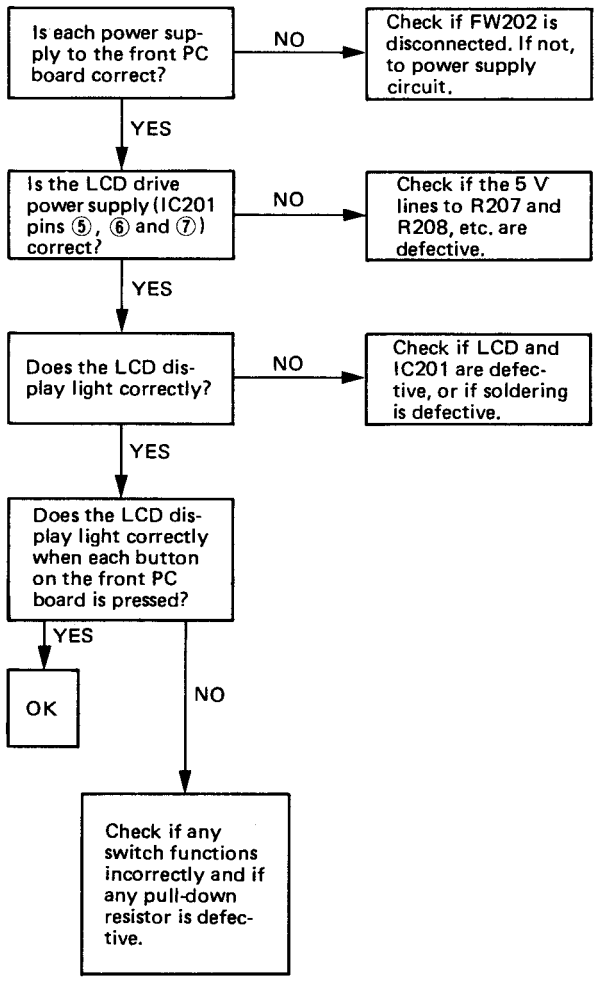

Power ON
Points
Slider turns REST SW ON.
Is P201 pin ④ on the front PC board 5 V?
Laser diode emits light
Check that IC201 pin ㉑ on the front PC board becomes +5 V and that it is fed correctly to the pickup.
Laser is focused
Disc is rotated
Check that IC301 pin ⑪ on the main PC board becomes 5 V and that it is fed correctly to the spindle motor.
Tracking loop is applied
Eye pattern is output
When the eye pattern is not output, check the RF amp. When the eye pattern is not displayed clearly, perform the Y-axis, focus offset and PLL freerunning adjustments.
TOC reading
Disc brake
Check that IC301 pin ⑫ on the main PC board becomes 5 V and that it is fed correctly to the spindle motor.
Laser OFF
Check that IC201 pin ⑦ on the front PC board becomes 0 V and that it is fed correctly to the pickup.
■ When the focus servo is done correctly
5 V
FCS
IC301 ⑬
0
1.2V
C555 ⊕
0
Q554 Ⓔ
0
0.2V
Focus drive
This triggers the dropping of FCS.
TP8 (FE)
2 ~ 3V
0
Focus error
FZC
IC502 ② 5 V
0
FRF 5 V
IC502 ① 0
Should be H after 139 msec.
■ Points at which the focus servo is not applied correctly
● When the lens moves up and down in a 2-second interval, FZC is not output.
● When the lens moves up and down in less than 1 second, FRF is not output or the focus servo loop is abnormal.
■ When the tracking servo is applied correctly
TP I
3V
Approx. 2 sec.
Disc start
TOC reading OK.
■ When the tracking servo loop is not applied correctly
● When the waveform does not oscillate around 0 V, check the tracking offset adjustment.
● When the waveform is output, the tracking loop is abnormal.

Troubleshooting

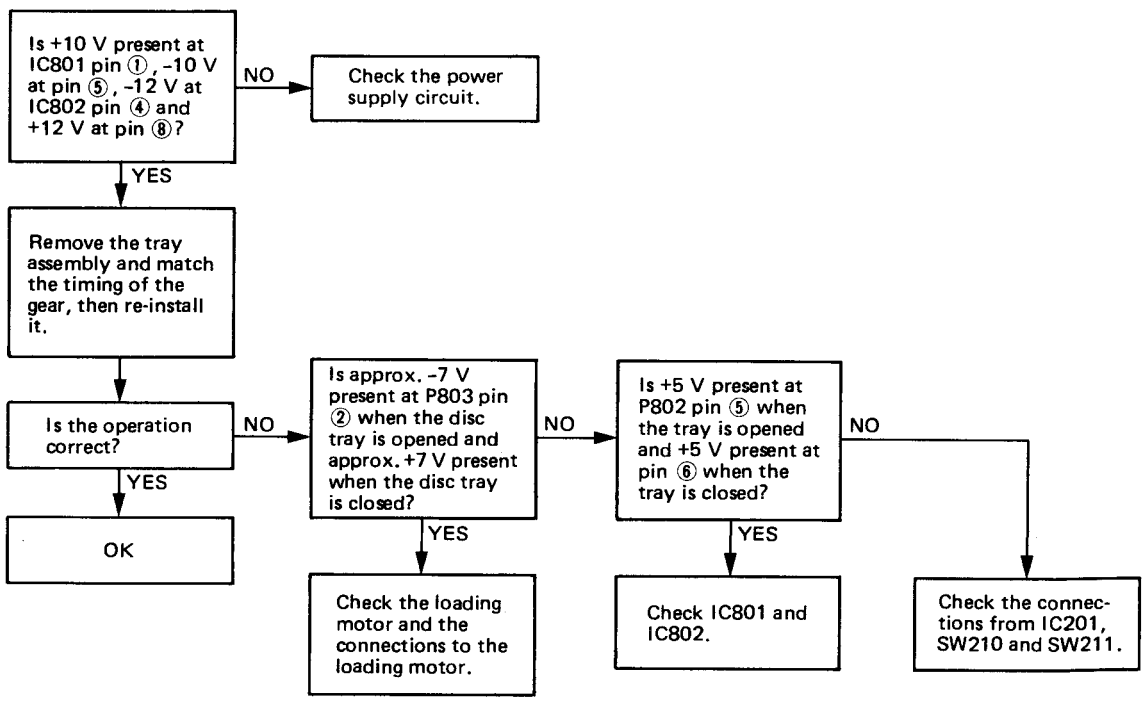
Shows the condition of each circuit from the time when the power is turned on to when play can be started.


Power ON
Does the LCD display light correctly?
NO
To front section
YES
Is the disc tray opened/closed by the OPEN/CLOSE button?
NO
To loading section
Does the time indications on the LCD display show - - - - when the disc tray is closed?
NO
YES
Can TOC be read?
NO
Is the disc rotated?
NO
Is the pickup lens moved up and down when the disc tray is closed?
NO
Is P201 pin ④ +5 V?
NO
To feed section
YES
To focus section
YES
YES
YES
Tracking servo, feed servo, spindle servo and PLL auto slicer circuit section
NO
Can the first track be played?
YES
Is the tracking loop applied?
0V
YES
Is the waveform of 1 V/div., 0.5 sec/div. observed at TP2, TE?
NO
To tracking section
Is the laser emitted for approx. 8 sec. after closing the disc tray? (Check with the laser power meter.)
NO
Is P501 pin ② +5 V for approx. 8 sec. after closing the disc tray?
NO
YES
Check the pick-up and the connections from P501 to the pickup.
Check the connections to IC201 and P501.
Y-axis focus off-set adjustment
NO
Is the RF wave-form correct?
YES
Tracking servo and feed servo
NO
Can the search operation be per-formed correctly to each track?
YES
To signal processing section
NO
Is sound output?
YES
Is the waveform of 1.7 V – 2.5 V observed at TP3 (RF) momen-tarily?
YES
NO
Check the RF circuit and pickup.
If the correct operation is not obtained after performing the PLL freerunning adjustment, check the PLL and auto slicer circuit.
Is the laser focused in ap-prox. 8 sec. after loading the disc. (Check the lens movement by visual inspection.)
NO
YES
To spindle section
To focus section
Check general operations
To front section
NO
Are all operation keys on the front panel and the LCD display correct?
YES
OK

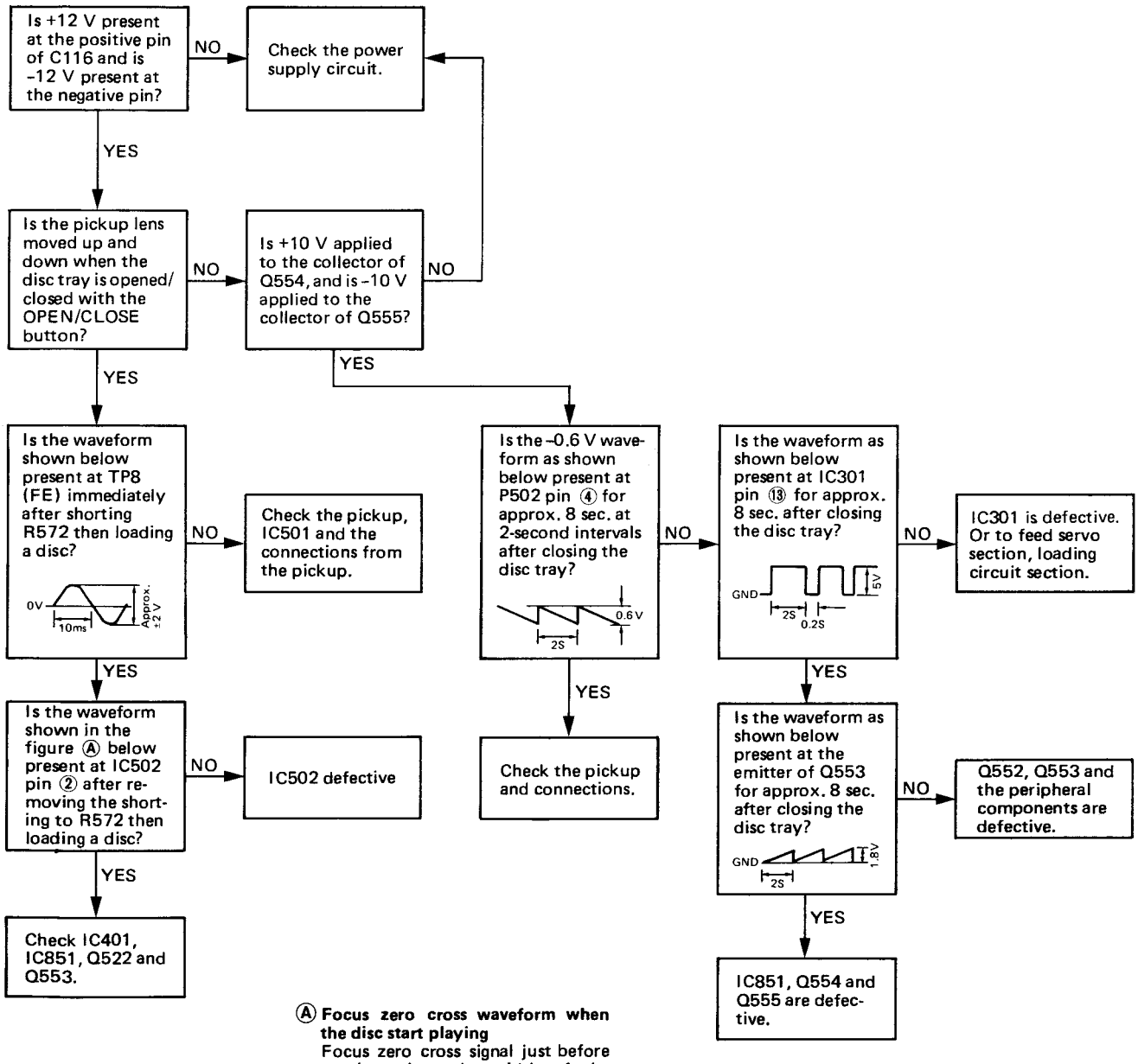
Front circuit section


Is each power supply to the front PC board correct?
NO
Check if FW202 is disconnected. If not, to power supply circuit.
YES
Is the LCD drive power supply (IC201 pins ⑤, ⑥ and ⑦) correct?
NO
Check if the 5 V lines to R207 and R208, etc. are defective.
YES
Does the LCD display light correctly?
NO
Check if LCD and IC201 are defective, or if soldering is defective.
YES
Does the LCD display light correctly when each button on the front PC board is pressed?
YES
OK
NO
Check if any switch functions incorrectly and if any pull-down resistor is defective.

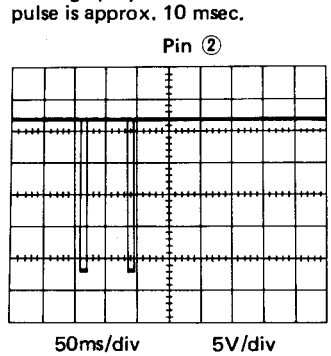
Loading circuit section


Is +10 V present at IC801 pin ①, -10 V at pin ⑤, -12 V at IC802 pin ④ and +12 V at pin ⑧?
NO
Check the power supply circuit.
YES
Remove the tray assembly and match the timing of the gear, then re-install it.
Is the operation correct?
NO
YES
OK
Is approx. -7 V present at P803 pin ② when the disc tray is opened and approx. +7 V present when the disc tray is closed?
NO
YES
Check the loading motor and the connections to the loading motor.
Is +5 V present at P802 pin ⑤ when the tray is opened and +5 V present at pin ⑥ when the tray is closed?
NO
YES
Check IC801 and IC802.
Check the connections from IC201, SW210 and SW211.

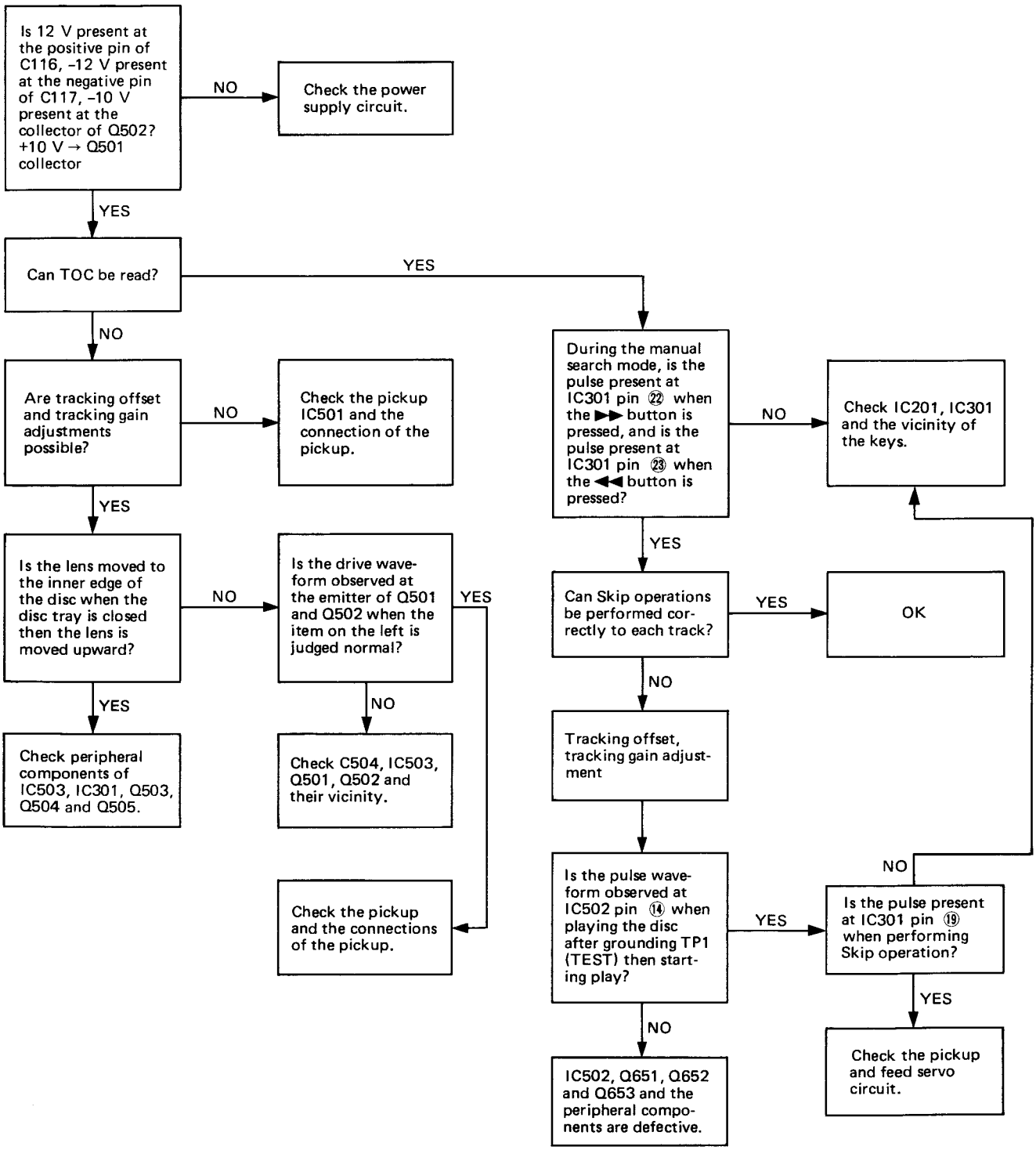
Focus servo circuit section


Is +12 V present at the positive pin of C116 and is -12 V present at the negative pin?
NO
Check the power supply circuit.
YES
Is the pickup lens moved up and down when the disc tray is opened/closed with the OPEN/CLOSE button?
NO
Is +10 V applied to the collector of Q554, and is -10 V applied to the collector of Q555?
NO
YES
YES
Is the waveform shown below present at TP8 (FE) immediately after shorting R572 then loading a disc?
0V
10ms
Approx. ±2 V
NO
Check the pickup, IC501 and the connections from the pickup.
YES
Is the waveform shown in the figure Ⓐ below present at IC502 pin ② after removing the shorting to R572 then loading a disc?
NO
IC502 defective
YES
Check IC401, IC851, Q522 and Q553.
Is the -0.6 V waveform as shown below present at P502 pin ④ for approx. 8 sec. at 2-second intervals after closing the disc tray?
0.6 V
2S
NO
YES
Check the pickup and connections.
Is the waveform as shown below present at IC301 pin ⑬ for approx. 8 sec. after closing the disc tray?
GND
5V
2S
0.2S
NO
IC301 is defective. Or to feed servo section, loading circuit section.
YES
Is the waveform as shown below present at the emitter of Q553 for approx. 8 sec. after closing the disc tray?
GND
1.8V
2S
NO
Q552, Q553 and the peripheral components are defective.
YES
IC851, Q554 and Q555 are defective.

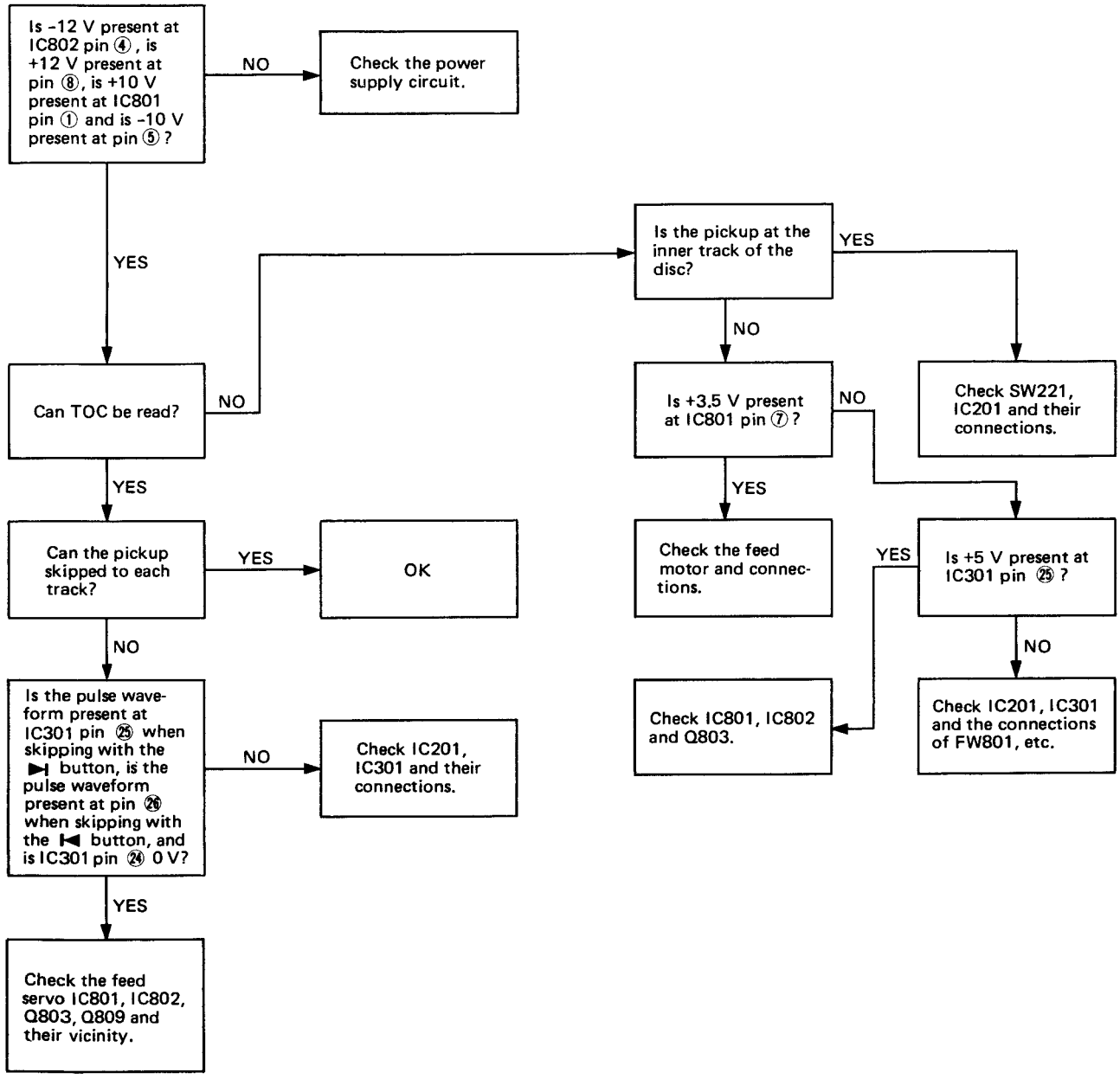
Ⓐ **Focus zero cross waveform when the disc start playing**
Focus zero cross signal just before starting play: the width of the pulse is approx. 10 msec.



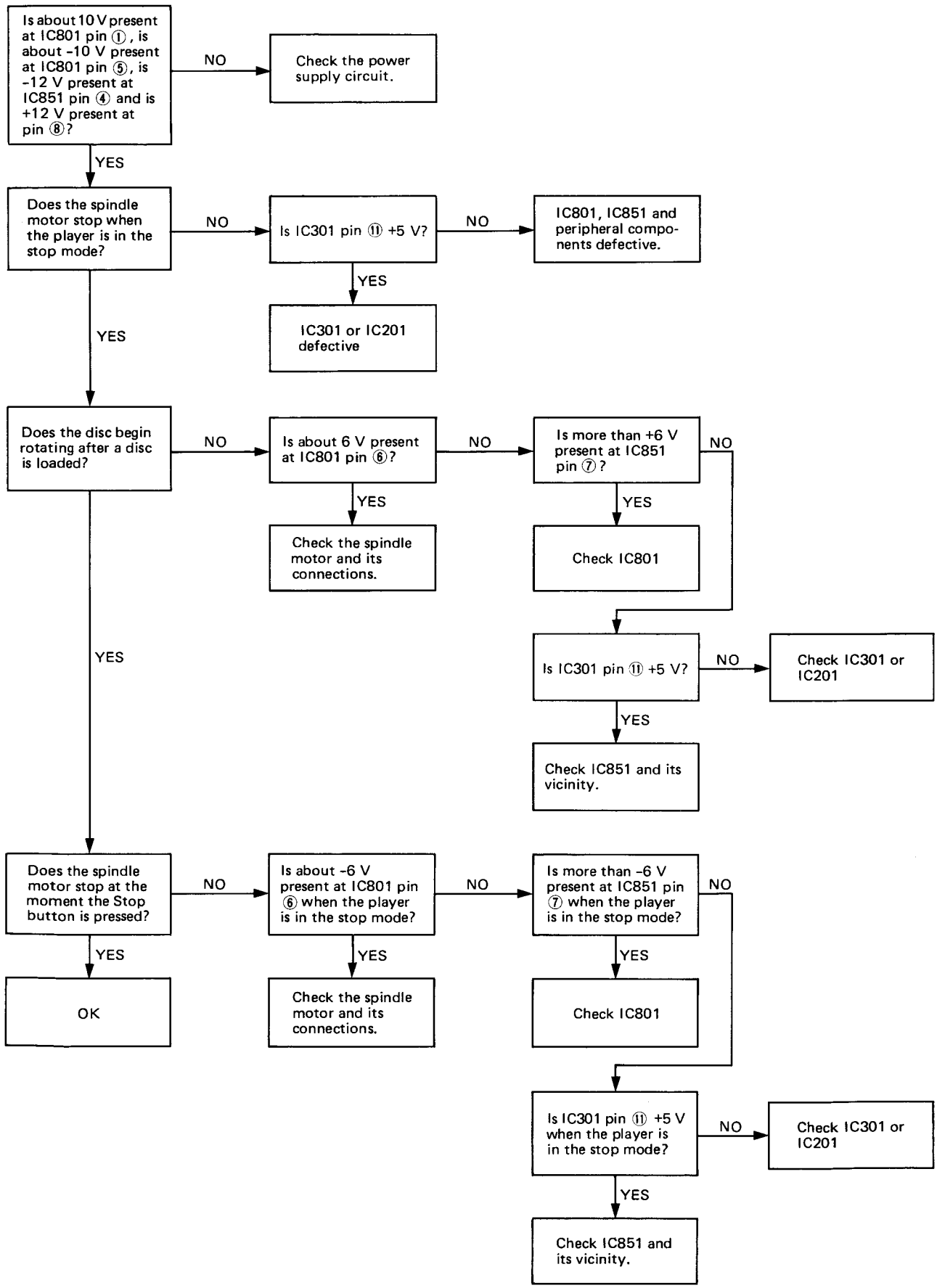
Tracking servo circuit section


Is 12 V present at the positive pin of C116, -12 V present at the negative pin of C117, -10 V present at the collector of Q502? +10 V → Q501 collector
NO
Check the power supply circuit.
YES
Can TOC be read?
YES
NO
Are tracking offset and tracking gain adjustments possible?
NO
Check the pickup IC501 and the connection of the pickup.
YES
Is the lens moved to the inner edge of the disc when the disc tray is closed then the lens is moved upward?
NO
Is the drive waveform observed at the emitter of Q501 and Q502 when the item on the left is judged normal?
YES
YES
Check peripheral components of IC503, IC301, Q503, Q504 and Q505.
NO
Check C504, IC503, Q501, Q502 and their vicinity.
Check the pickup and the connections of the pickup.
During the manual search mode, is the pulse present at IC301 pin ㉒ when the ▶▶ button is pressed, and is the pulse present at IC301 pin ㉓ when the ◀◀ button is pressed?
NO
Check IC201, IC301 and the vicinity of the keys.
YES
Can Skip operations be performed correctly to each track?
YES
OK
NO
Tracking offset, tracking gain adjustment
Is the pulse waveform observed at IC502 pin ⑭ when playing the disc after grounding TP1 (TEST) then starting play?
YES
NO
Is the pulse present at IC301 pin ⑲ when performing Skip operation?
NO
YES
Check the pickup and feed servo circuit.
NO
IC502, Q651, Q652 and Q653 and the peripheral components are defective.

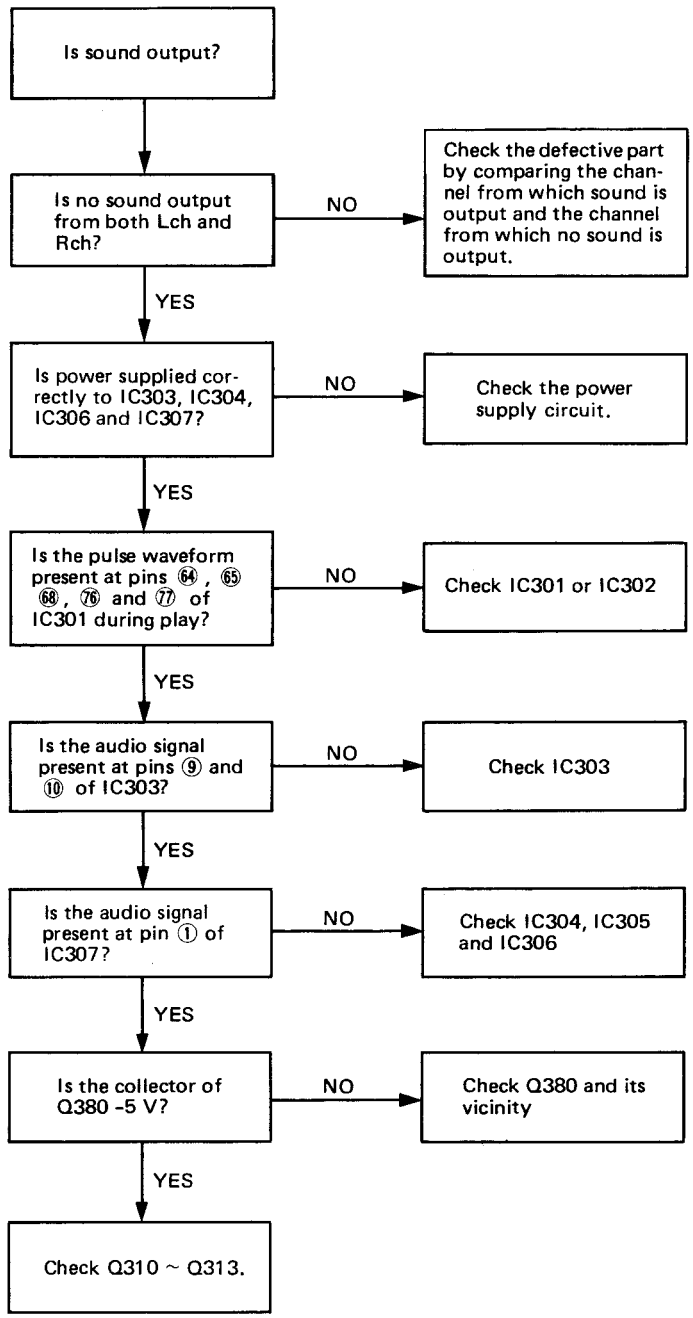
Feed servo circuit section


Is -12 V present at IC802 pin ④, is +12 V present at pin ⑧, is +10 V present at IC801 pin ① and is -10 V present at pin ⑤?
NO
Check the power supply circuit.
YES
Is the pickup at the inner track of the disc?
YES
NO
Can TOC be read?
NO
Is +3.5 V present at IC801 pin ⑦?
NO
Check SW221, IC201 and their connections.
YES
YES
Can the pickup skipped to each track?
YES
OK
Check the feed motor and connections.
YES
Is +5 V present at IC301 pin ㉕?
NO
Is the pulse waveform present at IC301 pin ㉕ when skipping with the ▶| button, is the pulse waveform present at pin ㉖ when skipping with the |◀ button, and is IC301 pin ㉔ 0 V?
NO
Check IC201, IC301 and their connections.
Check IC801, IC802 and Q803.
Check IC201, IC301 and the connections of FW801, etc.
YES
Check the feed servo IC801, IC802, Q803, Q809 and their vicinity.

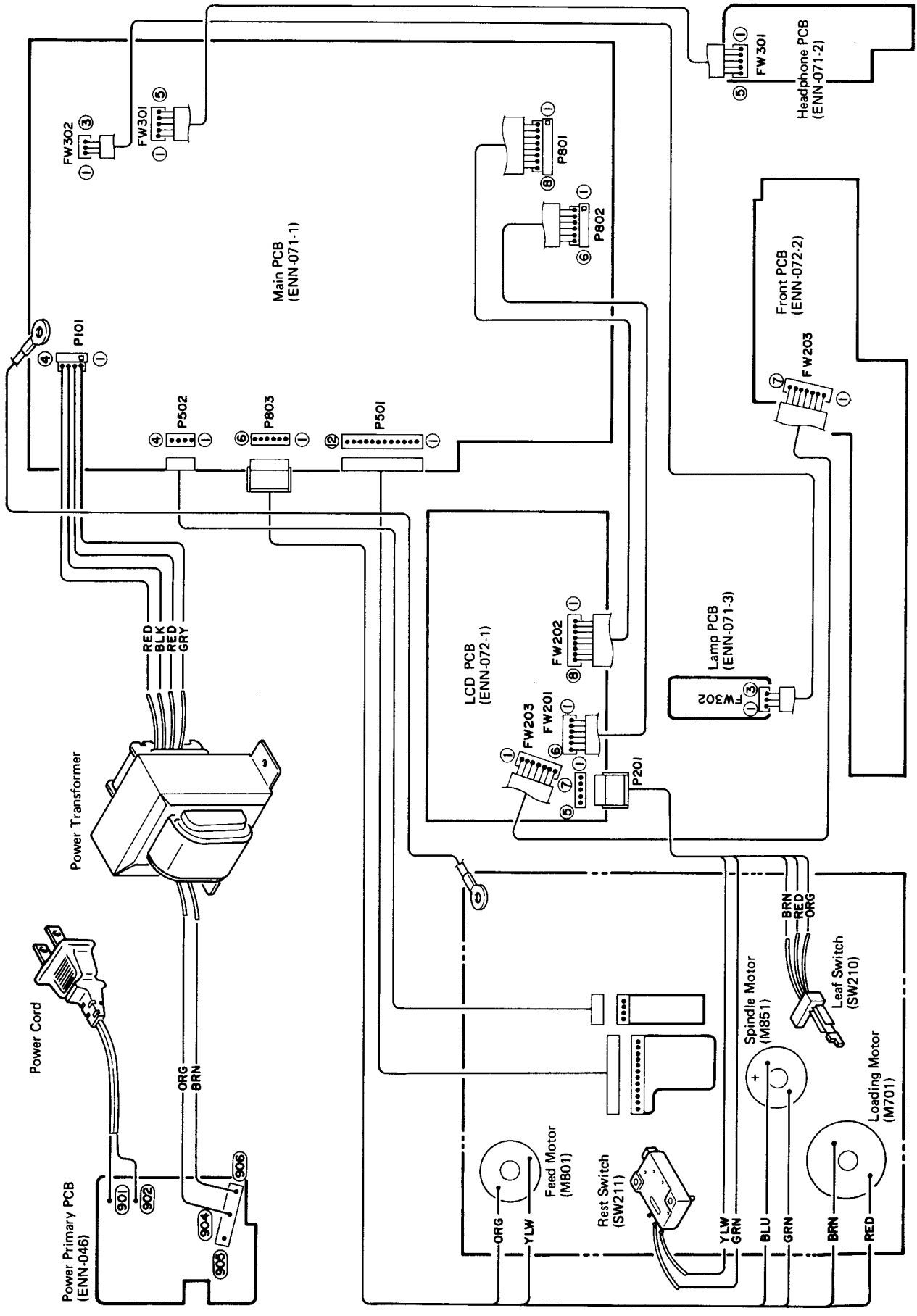
Spindle servo circuit section


Is about 10 V present at IC801 pin ①, is about -10 V present at IC801 pin ⑤, is -12 V present at IC851 pin ④ and is +12 V present at pin ⑧?
NO
Check the power supply circuit.
YES
Does the spindle motor stop when the player is in the stop mode?
NO
Is IC301 pin ⑪ +5 V?
NO
IC801, IC851 and peripheral components defective.
YES
IC301 or IC201 defective
YES
Does the disc begin rotating after a disc is loaded?
NO
Is about 6 V present at IC801 pin ⑥?
NO
Is more than +6 V present at IC851 pin ⑦?
NO
YES
Check the spindle motor and its connections.
YES
Check IC801
YES
Is IC301 pin ⑪ +5 V?
NO
Check IC301 or IC201
YES
Check IC851 and its vicinity.
Does the spindle motor stop at the moment the Stop button is pressed?
NO
Is about -6 V present at IC801 pin ⑥ when the player is in the stop mode?
NO
Is more than -6 V present at IC851 pin ⑦ when the player is in the stop mode?
NO
YES
OK
YES
Check the spindle motor and its connections.
YES
Check IC801
Is IC301 pin ⑪ +5 V when the player is in the stop mode?
NO
Check IC301 or IC201
YES
Check IC851 and its vicinity.

Signal processing circuit section

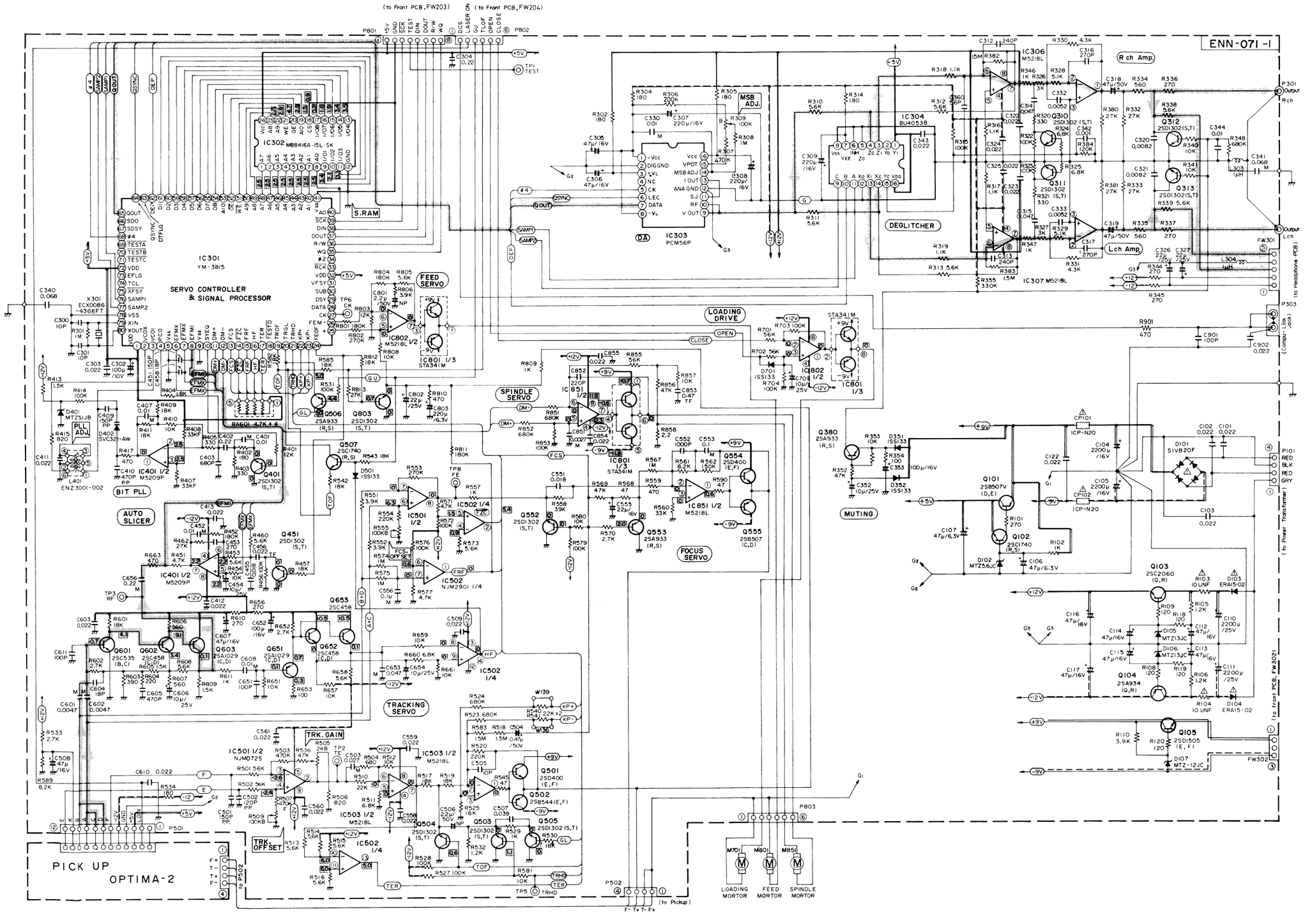

Is sound output?
Is no sound output from both Lch and Rch?
NO
Check the defective part by comparing the channel from which sound is output and the channel from which no sound is output.
YES
Is power supplied correctly to IC303, IC304, IC306 and IC307?
NO
Check the power supply circuit.
YES
Is the pulse waveform present at pins ⑭, ⑮ ⑱, ⑯ and ⑰ of IC301 during play?
NO
Check IC301 or IC302
YES
Is the audio signal present at pins ⑨ and ⑩ of IC303?
NO
Check IC303
YES
Is the audio signal present at pin ① of IC307?
NO
Check IC304, IC305 and IC306
YES
Is the collector of Q380 -5 V?
NO
Check Q380 and its vicinity
YES
Check Q310 ~ Q313.

Connection Diagram

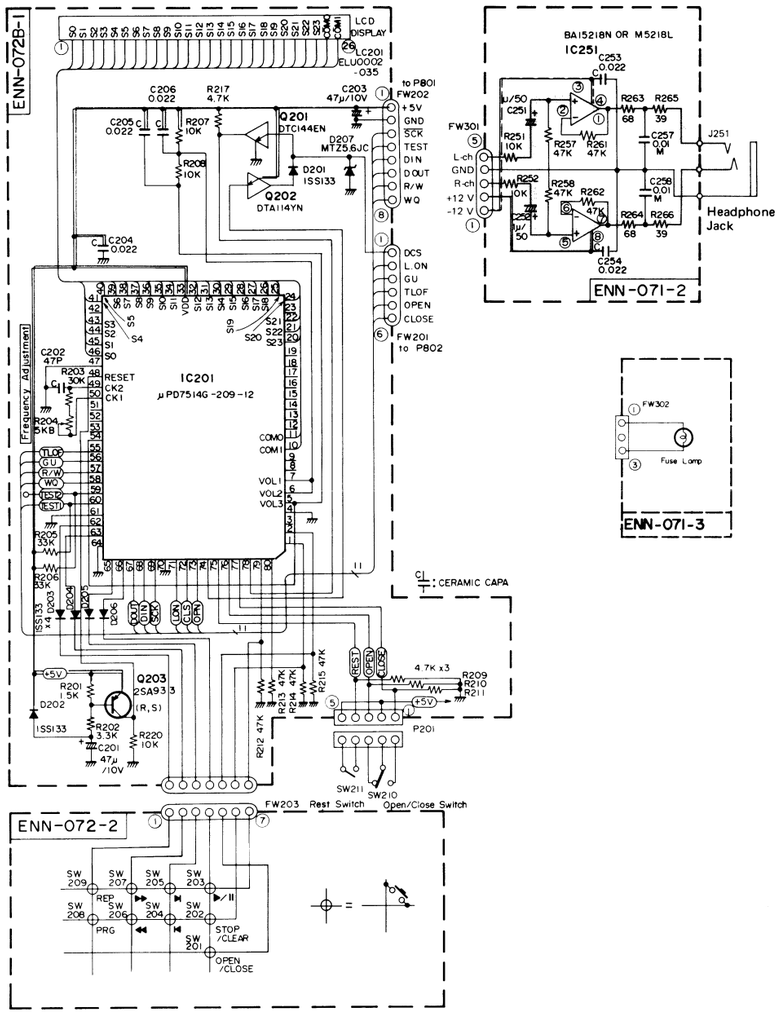


Schematic Diagrams

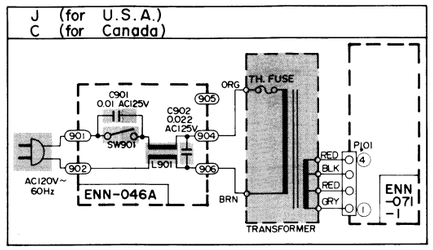
(1) Main Section

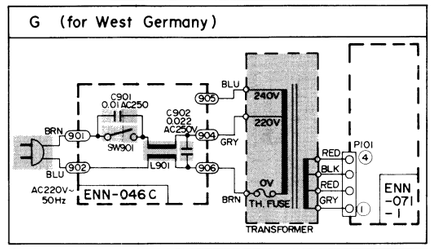


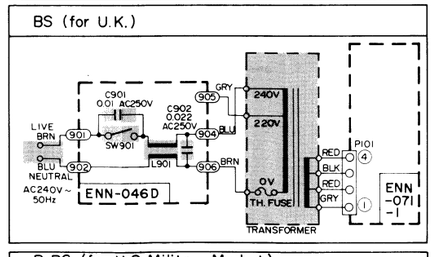
(2) Power Supply Section

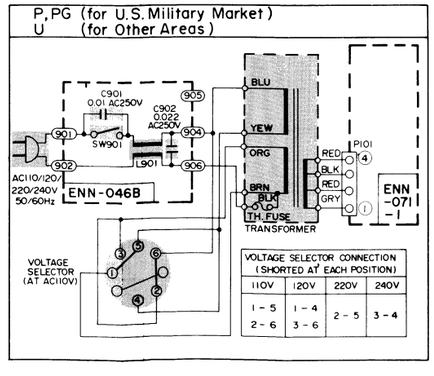


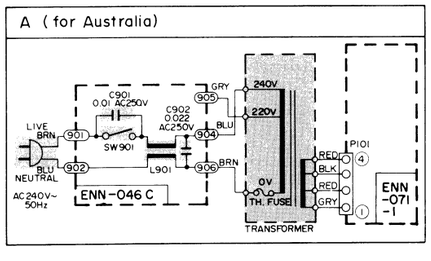
POWER SUPPLY BLOCK

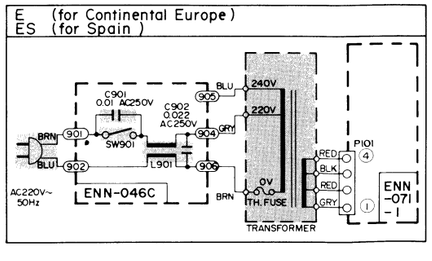












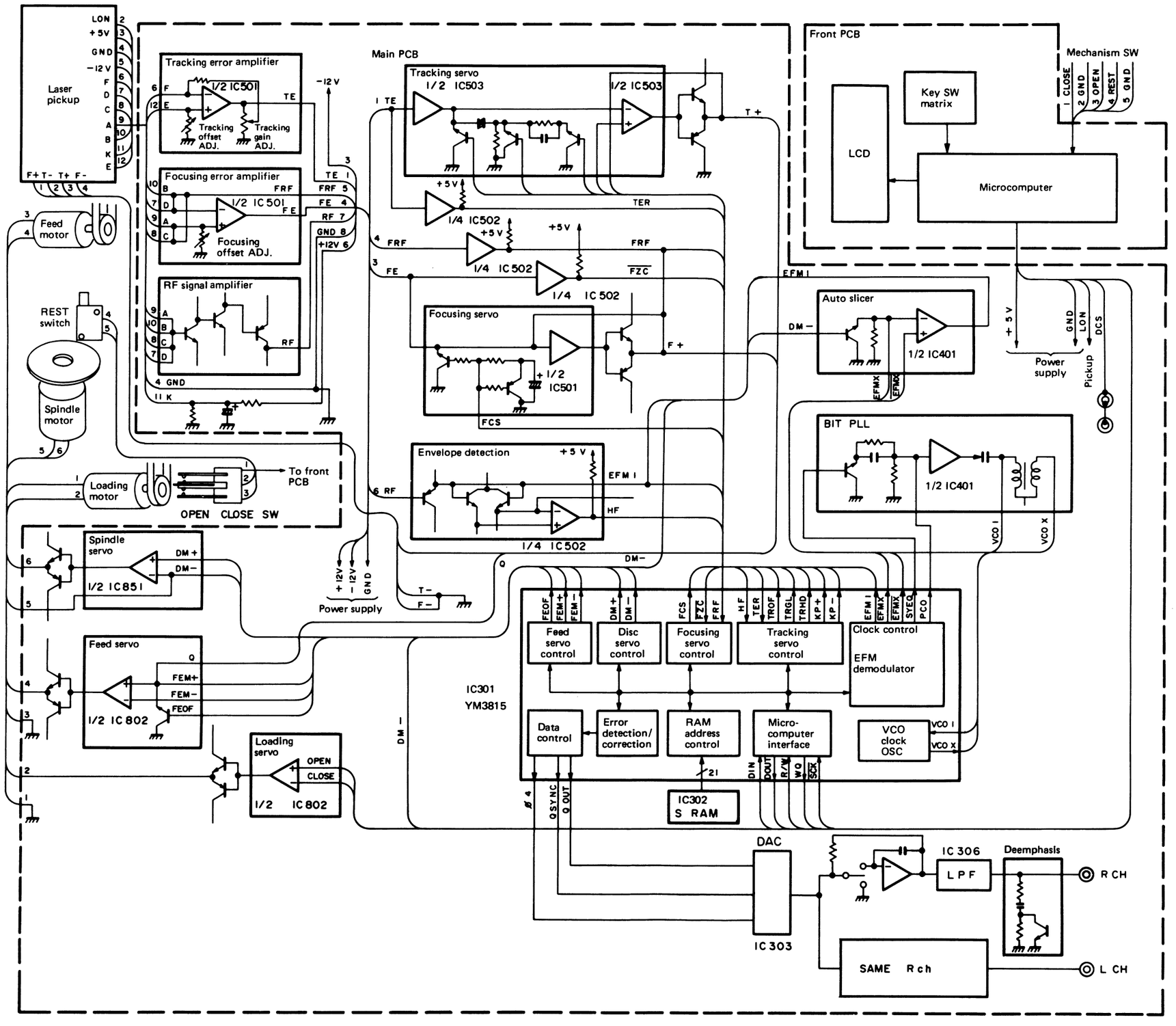
Notes:

1. ▭ shows DC voltage to the chassis with no signal input.
2. ——— indicates positive B power supply.
3. - - - - indicates negative B power supply.
4. indicates signal path.
5. When replacing the parts in the darkened area (▒) and those marked with ⚠, be sure to use the designated parts to ensure safety.
6. This is the standard circuit diagram.
   The design and contents are subject to change without notice.

TERMINAL VOLTAGE OF IC201

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0	21	5/0 ⎍	41	5/0 ⎍	61	0
2	0	22	5/0 ⎍	42	——	62	5/0 ⎍
3	——	23	——	43	5/0 ⎍	63	5/0 ⎍
4	0	24	5/0 ⎍	44	5/0 ⎍	64	0
5	0	25	5/0 ⎍	45	5/0 ⎍	65	5/0 ⎍
6	2.5	26	5/0 ⎍	46	5/0 ⎍	66	5/0 ⎍
7	2.5	27	5/0 ⎍	47	0	67	0
8	——	28	5/0 ⎍	48	0	68	5.1
9	——	29	5/0 ⎍	49	5/0 ⎍	69	5.1
10	5/0 ⎍	30	5/0 ⎍	50	5/0 ⎍	70	0
11	5/0 ⎍	31	5/0 ⎍	51	——	71	0
12	——	32	5/0 ⎍	52	——	72	0
13	——	33	5.1	53	——	73	0
14	——	34	5/0 ⎍	54	0	74	5.1
15	——	35	5/0 ⎍	55	5	75	5.1
16	——	36	5/0 ⎍	56	0	76	0
17	——	37	5/0 ⎍	57	0	77	5.1
18	——	38	5/0 ⎍	58	0	78	5.1
19	——	39	5/0 ⎍	59	5.1	79	0
20	5/0 ⎍	40	5/0 ⎍	60	5.1	80	0

Block Diagram



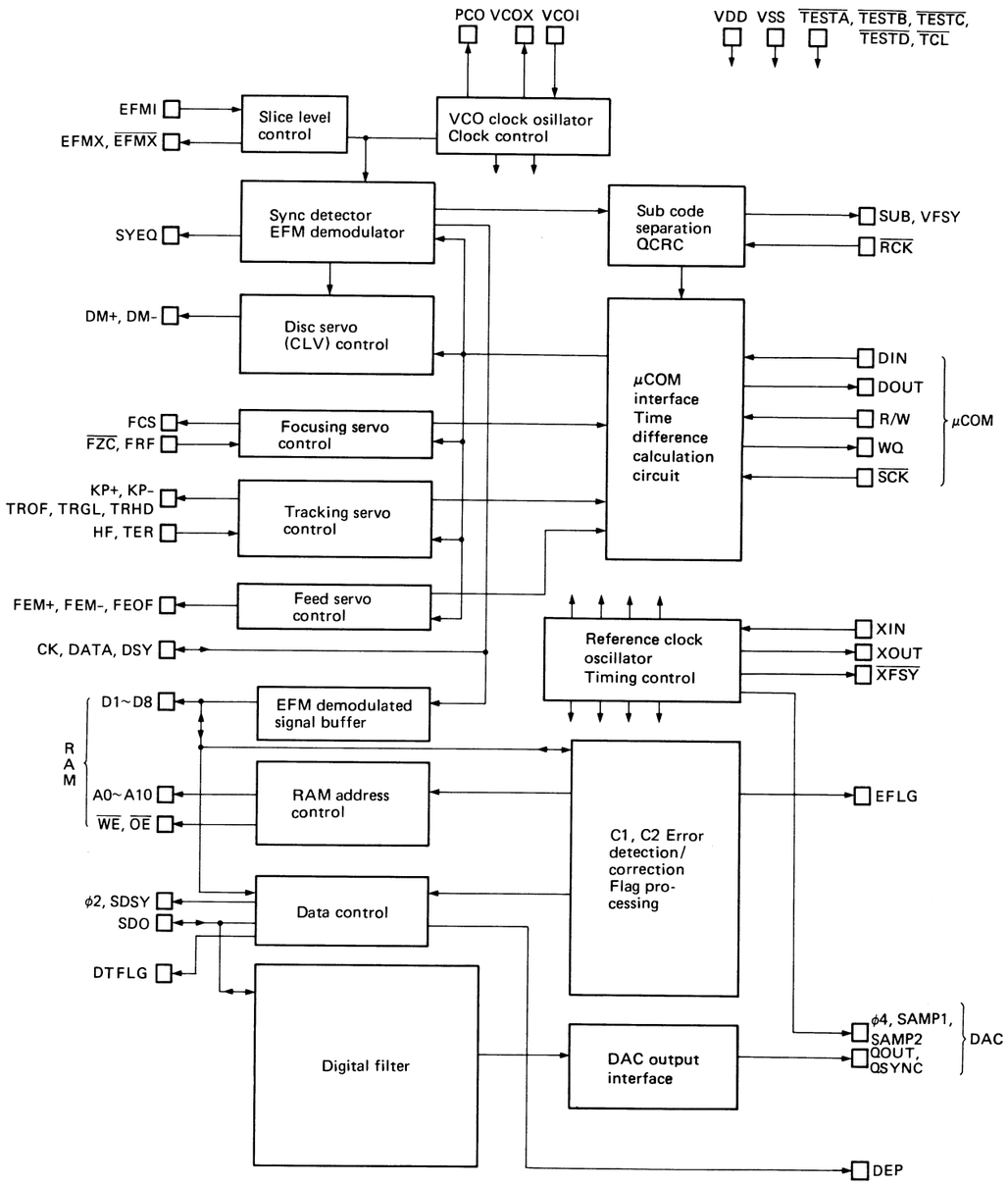
Description of Major LSI ICs

■ IC301: YM3815

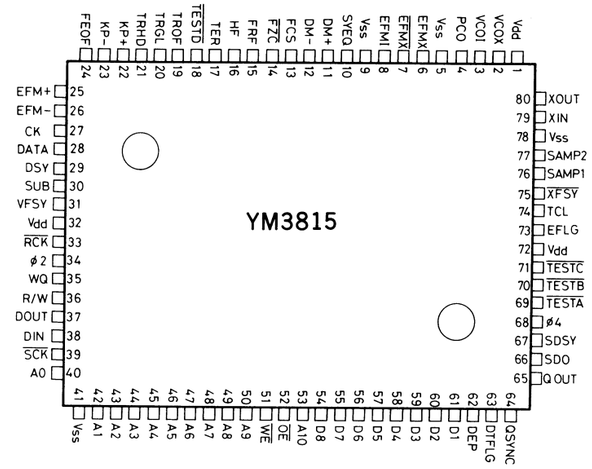
(1) Outline:

YM3815 is a C-MOS LSI for signal processing (SGP) and servo control (SVC) in a CD player. It is used for the demodulation of the EFM signal from the photo pickup, detection/correction of the error signal, signal processing in digital filtering, etc. and for various servo controls (focusing, disc, tracking and feed servos).

(2) Internal block diagram



(3) Terminal Layout



(4) Pin Functions

IC301 : YM3815

Pin No.	Name	I/O	Function	Pin No.	Name	I/O	Function
1	Vdd	---	Reference voltage	41	Vss	---	Reference voltage
2	VCOX	O	Clock replay circuit	42	A1	O	Connect to RAM. (Address)
3	VCOI	I	Clock replay circuit	43	A2	O	Connect to RAM. (Address)
4	PCO	O	Clock replay circuit	44	A3	O	Connect to RAM. (Address)
5	Vss	---	Reference voltage	45	A4	O	Connect to RAM. (Address)
6	EFMX	O	EFM signal ext.circuit	46	A5	O	Connect to RAM. (Address)
7	EFMX	O	EFM signal ext.circuit	47	A6	O	Connect to RAM. (Address)
8	EFMI	I	EFM signal ext.circuit	48	A7	O	Connect to RAM. (Address)
9	Vss	---	Reference voltage	49	A8	O	Connect to RAM. (Address)
10	SYEQ	O	Synchro. signal	50	A9	O	Connect to RAM. (Address)
11	DM+	O	Disc motor servo	51	WE	O	Connect to RAM.
12	DM-	O	Disc motor servo	52	OE	O	Connect to RAM.
13	FCS	O	Focusing servo	53	A10	O	Connect to RAM. (Address)
14	FZC	I	Focusing servo	54	D8	I/O	Connect to RAM. (Data)
15	FRF	I	Focusing servo	55	D7	I/O	Connect to RAM. (Data)
16	HF	I	Tracking servo	56	D6	I/O	Connect to RAM. (Data)
17	TER	I	Tracking servo	57	D5	I/O	Connect to RAM. (Data)
18	TESTD	I	Not used.	58	D4	I/O	Connect to RAM. (Data)
19	TROF	O	Tracking servo	59	D3	I/O	Connect to RAM. (Data)
20	TRGL	O	Tracking servo	60	D2	I/O	Connect to RAM. (Data)
21	TRHD	O	Tracking servo	61	D1	I/O	Connect to RAM. (Data)
22	KP+	O	Tracking servo	62	DEP	O	De-emphasis signal
23	KP-	O	Tracking servo	63	DTFLG	I	Not used.
24	FEOF	O	Feed motor servo	64	QSYNC	O	Not used.
25	EFM+	O	Feed motor servo	65	QOUT	O	DAC interface
26	EFM-	O	Feed motor servo	66	SDO	I/O	Not used.
27	CK	I/O	Not used.	67	SDSY	O	Not used.
28	DATA	I/O	Not used.	68	φ4	O	DAC interface
29	DSY	I/O	Not used.	69	TESTA	I	Not used.
30	SUB	O	Not used.	70	TESTB	I	Not used.
31	VFSY	O	Not used.	71	TESTC	I	Not used.
32	Vdd	---	Reference voltage	72	Vdd	---	Reference voltage
33	RCK	I	Not used.	73	EFLG	O	Not used.
34	φ2	O	Not used.	74	TCL	I	Not used.
35	WQ	O	Q code output	75	XFSY	I/O	Not used.
36	R/W	I	Q code output	76	SAMP1	O	DAC interface
37	DOUT	O	Q code output	77	SAMP2	O	DAC interface
38	DIN	I	Microcomputer command	78	Vss	---	Reference voltage
39	SCK	I	Microcomputer command	79	XIN	I	Clock oscillator
40	AO	O	Connect to RAM.	80	XOUT	O	Clock oscillator

PARTS LIST

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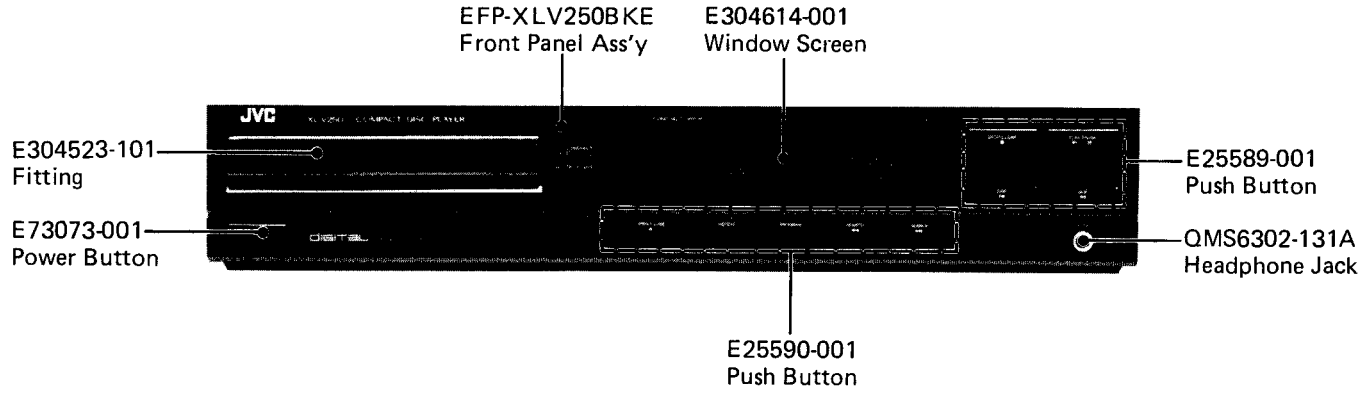
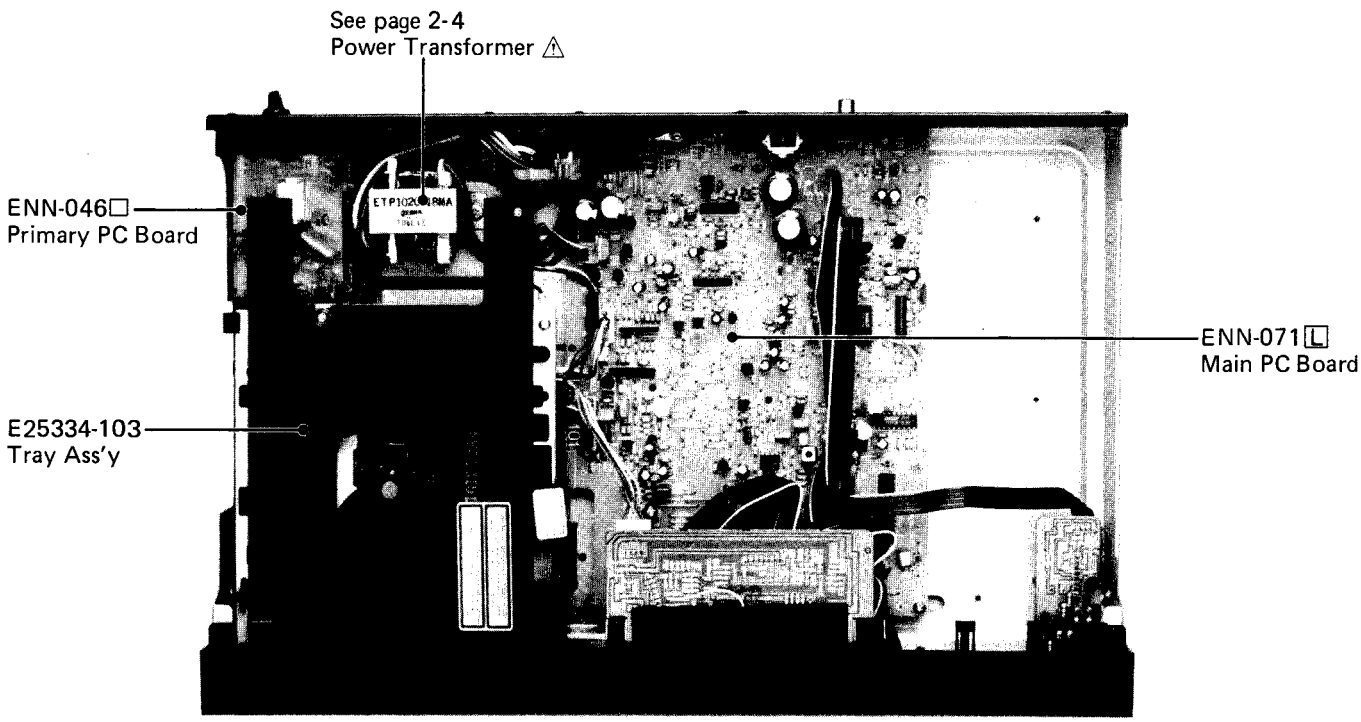
Main Parts Locations

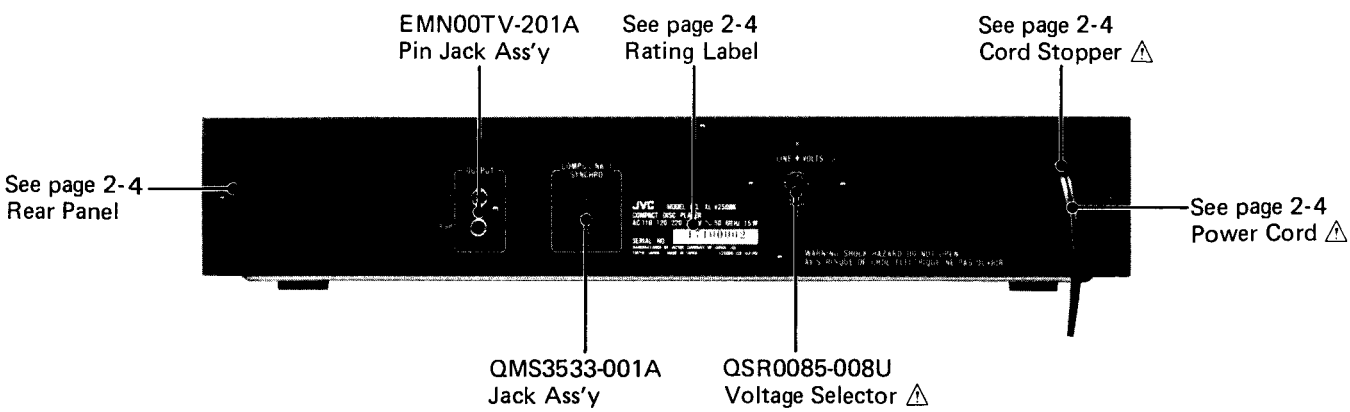
■ Front View



■ Top View

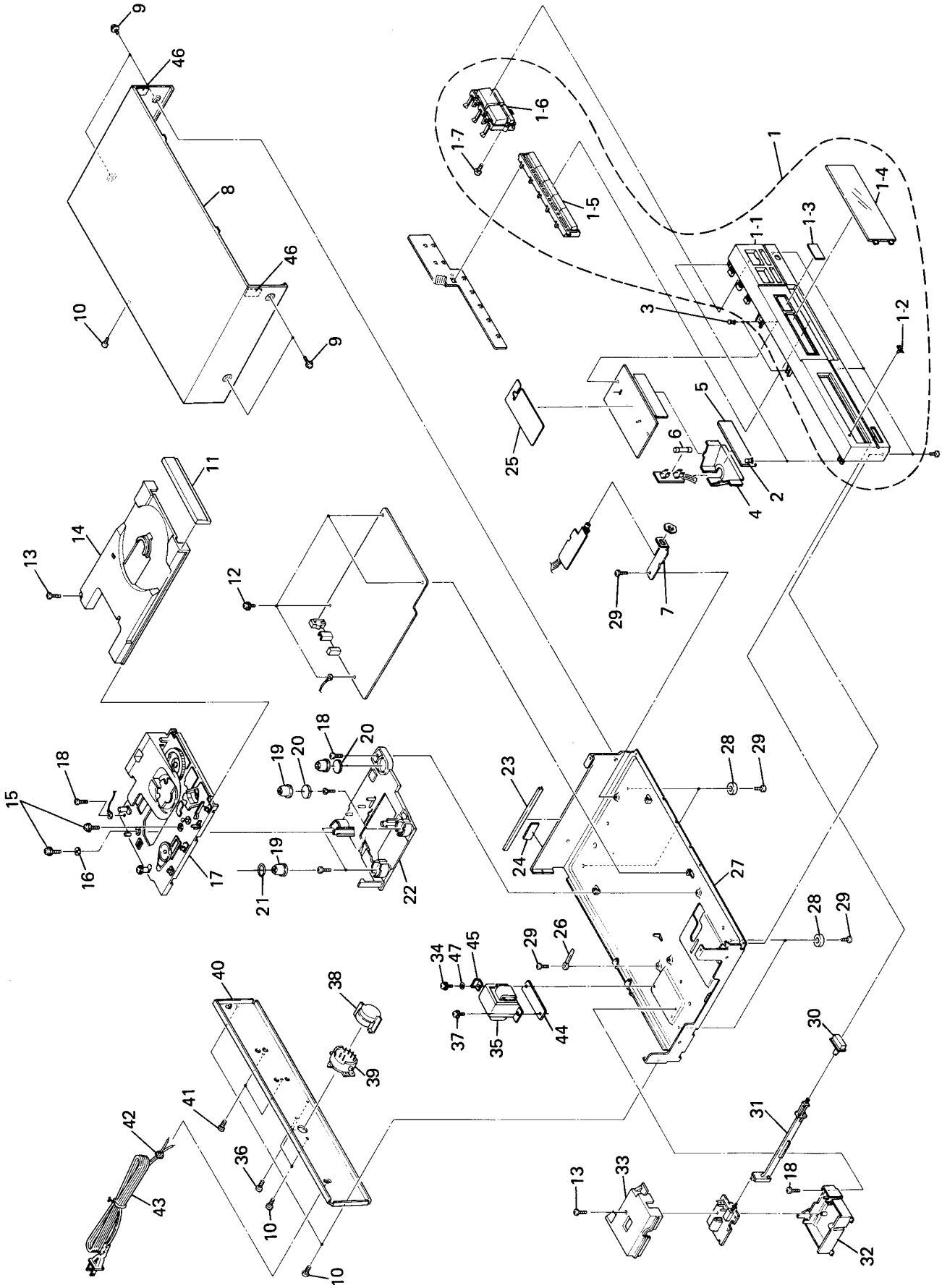


■ Rear View



⚠ : Safety Parts

Exploded View and Parts List



Exploded View and Parts List

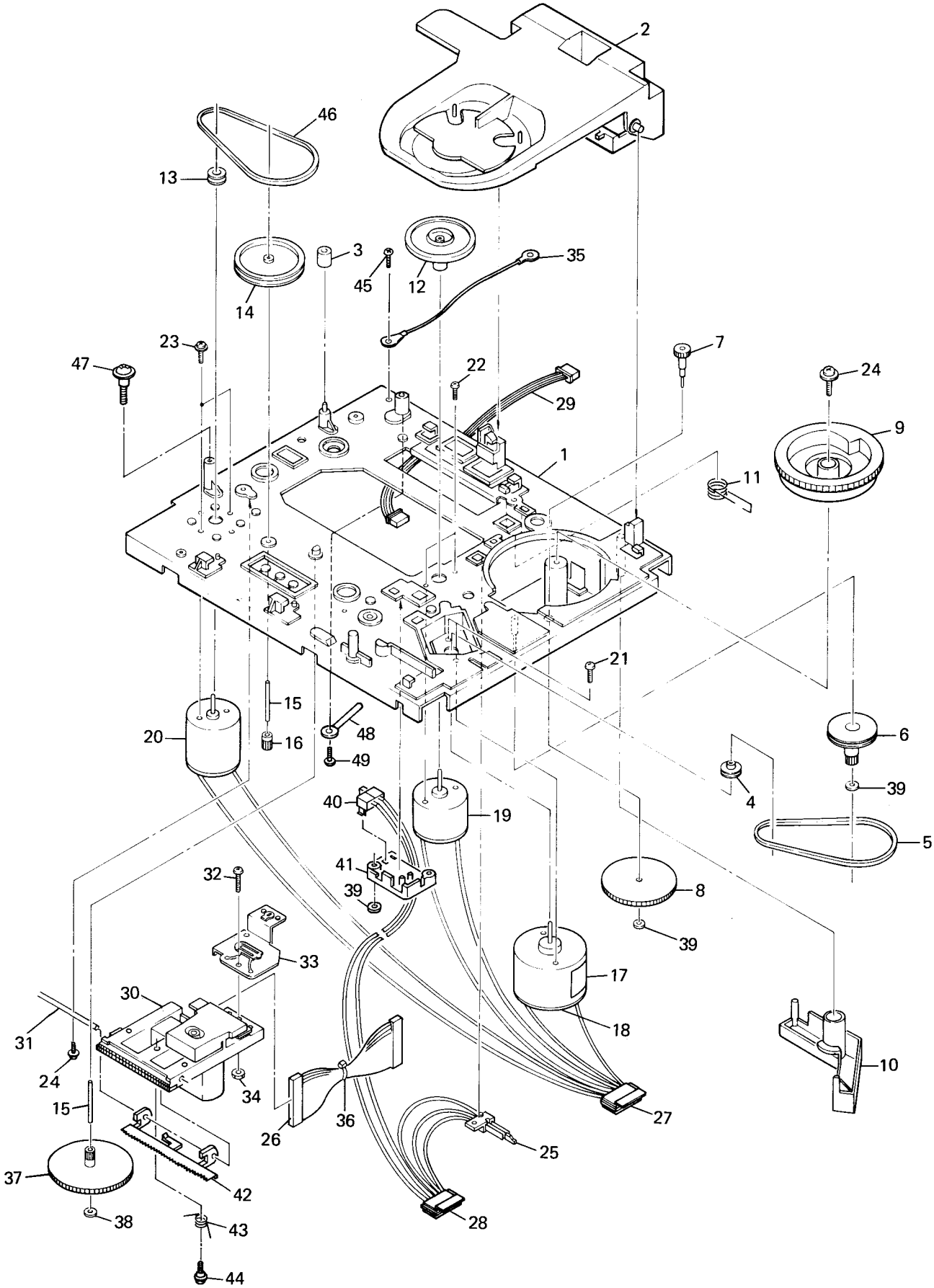
⚠	Item	Parts Number	Parts Name	Q'ty	Description	Areas
	1	EFP-XLV250BKE	Front Panel Ass'y	1		
	1-1	E11433-001	Front Panel	1		
	1-2	E72968-001	JVC Mark	1		
	1-3	E73901-001	Ornament	1		
	1-4	E304614-001	Window Screen	1		
	1-5	E25590-001	Push Button	1		
	1-6	E25589-001	Push Button	1		
	1-7	SBSF3008M	Screw	1		
	2	E48729-009	Plastic Rivet	2		
	3	E48729-007	Plastic Rivet	2		
	4	E304734-001	Reflector	1		
	5	E73828-001	Sheet	1		
	6	FLP4101-003	Fuse Lamp	1		
	7	E73931-001	Headphone Bracket	1		
	8	E25535-002	Metal Cover	1		
	9	E61660-004	Special Screw	4		
	10	SBSE3008M	Screw	7		
	11	E304523-101	Fitting	1		
	12	GBSE3008CC	Screw	4		
	13	SBSF3014Z	Screw	2		
	14	E25334-103	Tray Ass'y	1		
	15	E65923-003	Screw	2		
	16	E73322-001	Spacer	1		
	17	———	Mechanism Base Ass'y	1	See page 2-5	
	18	SBSE3008CC	Screw	6		
	19	E72393-003	FL.Rubber	4		
	20	E72634-001	Spacer	2		
	21	E74060-001	Spacer	1	for FL.Rubber	
	22	E11402-004	Stand	1		
	23	E65778-009	Spacer	1		
	24	E72572-011	Spacer	1		
	25	E74048-002	Spacer	1		
	26	E72018-001	Wire Clamp	1		
	27	E11432-001	Chassis Base	1		
	28	E47227-026	Foot	4		
	29	SDSE3006M	Screw	6		
	30	E73073-001	Power Button	1		
	31	E304208-001	Push Shaft	1		
	32	E25530-002	Case	1		
	33	E304207-003	Cover	1		
	34	SDST3012CC	Ass'y Screw	1		
⚠	35	ETP1020-18JA	Power Transformer	1		J,C
⚠		ETP1020-18EA	Power Transformer	1		E,A,G,ES
⚠		ETP1020-18MA	Power Transformer	1		P,PG,U
⚠		ETP1020-18EABS	Power Transformer	1		BS
	36	E73562-002	Screw	1		
	37	E65389-004	Screw	1		
	38	E302764-001	Cover	1		P,PG,U
⚠	39	QSR0085-008U	Voltage Selector	1		P,PG,U
	40	E25588-001	Rear Panel	1		J
		E25588-002	Rear Panel	1		C,E,A,G,ES,BS
		E25588-003	Rear Panel	1		P,PG,U
	41	SBSF3008M	Screw	2		
⚠	42	QHS3876-162	Cord Stopper	1		Except BS
⚠		QHS3876-162BS	Cord Stopper	1		BS
⚠	43	QMP1200-200	Power Cord	1		J,C
⚠		QMP2560-244	Power Cord	1		A
⚠		QMP3900-200	Power Cord	1		E,ES,G
⚠		QMP7600-200	Power Cord	1		P,PG,U
⚠		QMP9017-008BS	Power Cord	1		BS
	44	E74047-003	Sheet	3	Power Transformer	
	45	E72606-001	Bracket	1	Power Transformer	
	46	EX0021004R20S10	Spacer	2		
	47	WLS40007	Spring Washer	1		
	—	E24953-057	Rating Label	1		A
	—	E25943-057BS	Rating Label	1		BS
	—	E25096-329	Rating Label	1		U,P,PG
	—	E25096-529	Rating Label	1		E
	—	E25096-529F	Rating Label	1		G
	—	E25096-629	Rating Label	1		ES
	—	E25536-002	Rating Label	1		J
	—	E25536-102	Rating Label	1	SANIKA	J
	—	E25536-202	Rating Label	1	TOKUSHU	J
	—	E25096-129	Rating Label	1		C

⚠ : Safety Parts

The Marks for Designated Areas

J	U.S.A.	BS	U.K.
C	Canada	ES	Spain
A	Australia	P, PG	U.S. Military Market
E	Europe	U	Other Countries
G	West Germany	No Mark indicates all areas.	

Mechanism Ass'y

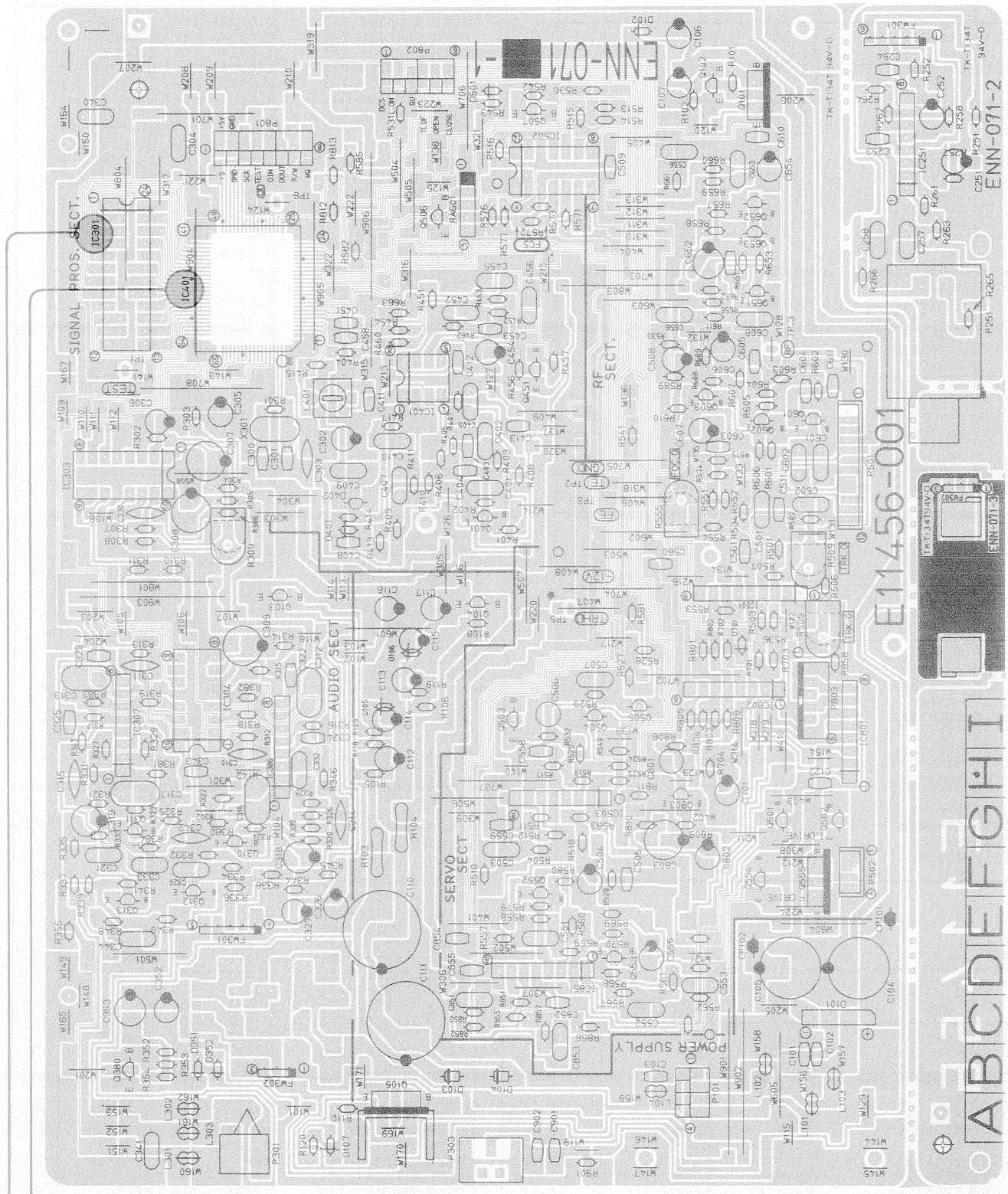


Mechanism Ass'y

⚠	Item No.	Parts Number	Parts Name	Q'ty	Description	Areas
	1	E11457-001	Base Ass'y	1		
	2	E304201-004	Holder Ass'Y	1		
	3	E70267-003	Rubber Tube	1		
	4	E72376-001	M.Pulley	1		
	5	E69879-002	Belt	1		
	6	E73061-001	Pulley	1		
	7	E72378-001	Gear (X)	1		
	8	E73062-001	Gear (Y)	1		
	9	E25332-001	Main Gear	1		
	10	E303831-003	Lever	1		
	11	E72382-001	Spring	1		
	12	E72379-001	Turntable	1		
	13	E73060-001	Pulley	1		
	14	E73063-001	Pulley (F)	1		
	15	E71731-002	Shaft	2		
	16	E73064-002	Feed Gear (A)	1		
	17	E71967-002	Label	1		
	18	E71569-001	Motor	1		
	19	RF-310T-10470	Motor	1		
	20	RF-260T-08450	Motor	1		
	21	SDSP2604N	Screw	2		
	22	E72963-203	W.H.Screw	2		
	23	E72963-268	W.H.Screw	2		
	24	E65923-004	T.Screw	2		
	25	ESB1200-003	Leaf Switch	1		
	26	EWS25C-B103	SKT Wire Ass'y	1		
	27	EWS016-094	SKT Wire Ass'y	1		
	28	EWS015-132	SKT Wire Ass'y	1		
	29	EWS254-B106	SKT Wire Ass'y	1		
	30	OPTIMA-2	Pickup Ass'y	1		
	31	E73066-001	Feed Shaft	1		
	32	SPSP2608Z	Screw	1		
	33	E304203-002	Pickup Base Ass'y	1		
	34	NNS2600Z	Nut	1		
	35	EWT021-026	SKT Wire Ass'y	1		
	36	E33754-001	Tie Band	1		
	37	E73700-001	Feed Gear	1		
	38	E72024-001	Speed Nut	1		
	39	E60912-001	Speed Nut	3		
	40	QSP2K11-E01	Push Switch	1		
	41	E304613-001	Switch Cover	1		
	42	E304196-002	Sub Rack	1		
	43	E73851-001	Spring	1		
	44	E73035-002	Screw	1		
	45	SBSE3008CC	Screw	1		
	46	E69879-003	Belt	1		
	47	E72404-002	Screw	1		
	48	E33754-008	Tie Band	1		
	49	SBSF3010Z	Screw	1		

Printed Circuit Board Ass'y and Parts List

■ ENN-071[L] Main PC Board Ass'y



*Silk-screen printed item no. (IC401) should read IC301.

*Silk-screen printed item no. (IC301) should read IC302.

Transistors

⚠	ITEM	PART NUMBER	DESCRIPTION	MAKER	AREA
	Q101	2SB507V(D/E)	SILICON	SANYO	
	Q102	2SC1740(R/S)	SILICON	ROHM	
	Q103	2SC2060(Q/R)	SILICON	ROHM	
	Q104	2SA934(Q/R)	SILICON	ROHM	
	Q105	2SD1505(E/F)	SILICON	ROHM	
	Q310	2SD1302(S/T)	SILICON	MATSUSHITA	
	Q311	2SD1302(S/T)	SILICON	MATSUSHITA	
	Q312	2SD1302(S/T)	SILICON	MATSUSHITA	
	Q313	2SD1302(S/T)	SILICON	MATSUSHITA	
	Q380	2SA933(R/S)	SILICON	ROHM	
	Q401	2SD1302(S/T)	SILICON	MATSUSHITA	
	Q451	2SD1302(S/T)	SILICON	MATSUSHITA	
	Q501	2SD400MP(E/F)	SILICON	SANYO	
	Q502	2SB544MP(E/F)	SILICON	SANYO	
	Q503	2SD1302(S/T)	SILICON	MATSUSHITA	
	Q504	2SD1302(S/T)	SILICON	MATSUSHITA	
	Q505	2SD1302(S/T)	SILICON	MATSUSHITA	
	Q506	2SA933(R/S)	SILICON	ROHM	
	Q507	2SC1740(R/S)	SILICON	ROHM	
	Q552	2SD1302(S/T)	SILICON	MATSUSHITA	
	Q553	2SA933(R/S)	SILICON	ROHM	
	Q554	2SD400MP(E/F)	SILICON	SANYO	
	Q555	2SB507V(D/E)	SILICON	SANYO	
	Q601	2SC535(B/C)	SILICON	HITACHI	
	Q602	2SC458(C/D)	SILICON	HITACHI	
	Q603	2SA1029(C/D)	SILICON	HITACHI	
	Q651	2SA1029(C/D)	SILICON	HITACHI	
	Q652	2SC458(C/D)	SILICON	HITACHI	
	Q653	2SC458(C/D)	SILICON	HITACHI	
	Q803	2SD1302(S/T)	SILICON	MATSUSHITA	

⚠ : SAFETY PARTS

ICs

⚠	ITEM	PART NUMBER	DESCRIPTION	MAKER	AREA
	IC251	M5218L	I.C.	MITSUBISHI	
	IC301	YM3815	I.C.		
	IC302	MB8416A-15L-SK	I.C.		
	IC303	PCM56P	I.C.		
	IC304	BU4053B	I.C.	ROHM	
	IC306	M5218L	I.C.	MITSUBISHI	
	IC307	M5218L	I.C.	MITSUBISHI	
	IC401	M5209P	I.C.	MITSUBISHI	
	IC501	NJM072S	I.C.		
	IC502	NJM2901N	I.C.		
	IC503	M5218L	I.C.	MITSUBISHI	
	IC801	STA341M	I.C.		
	IC802	M5218L	I.C.	MITSUBISHI	
	IC851	M5218L	I.C.	MITSUBISHI	

⚠ : SAFETY PARTS

Diodes

⚠	ITEM	PART NUMBER	DESCRIPTION	MAKER	AREA
	D101	S1VB20F	SILICON		
	D102	MTZ5.6JC	ZENER	ROHM	
	D103	ERA15-02L19	SILICON		
	D104	ERA15-02L19	SILICON		
	D105	MTZ13JC	ZENER	ROHM	
	D106	MTZ13JC	ZENER	ROHM	
	D107	MTZ12JC	ZENER	ROHM	
	D351	1SS133	SILICON	ROHM	
	D352	1SS133	SILICON	ROHM	
	D401	MTZ5.1JB	ZENER	ROHM	
	D402	SVC321-AW	VARICAP	SANYO	
	D501	1SS133	SILICON	ROHM	
	D701	1SS133	SILICON	ROHM	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C101	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C102	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C103	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C104	QETB1CM-228	2200MF	16V	ELECTRO	
	C105	QETB1CM-228	2200MF	16V	ELECTRO	
	C106	QEK50JM-476	47MF	6.3V	ELECTRO	
	C107	QEK60JM-476	47MF	6.3V	ELECTRO	
	C110	QETB1EM-228	2200MF	25V	ELECTRO	
	C111	QETB1EM-228	2200MF	25V	ELECTRO	
	C112	QETB1CM-476	47MF	16V	ELECTRO	
	C113	QETB1CM-476	47MF	16V	ELECTRO	
	C114	QETB1CM-476	47MF	16V	ELECTRO	
	C115	QETB1CM-476	47MF	16V	ELECTRO	
	C116	QETB1CM-476	47MF	16V	ELECTRO	
	C117	QETB1CM-476	47MF	16V	ELECTRO	
	C122	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C251	QETB1HM-105	1MF	50V	ELECTRO	
	C252	QETB1HM-105	1MF	50V	ELECTRO	
	C253	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C254	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C257	QFN81HJ-103	0.01MF	50V	MYLAR	
	C258	QFN81HJ-103	0.01MF	50V	MYLAR	
	C300	QCSB1HJ-100	10PF	50V	CERAMIC	
	C301	QCSB1HJ-100	10PF	50V	CERAMIC	
	C302	QETB1AM-107	100MF	10V	ELECTRO	
	C303	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C304	QFV81HJ-224	0.22MF	50V	T.FILM	
	C305	QETB1CM-476	47MF	16V	ELECTRO	
	C306	QETB1CM-476	47MF	16V	ELECTRO	
	C307	QETB1CM-227	220MF	16V	ELECTRO	
	C308	QETB1CM-227	220MF	16V	ELECTRO	
	C309	QETB1CM-227	220MF	16V	ELECTRO	
	C312	QFP81HG-241	240PF	50V	POLY	
	C313	QFP81HG-241	240PF	50V	POLY	
	C314	QCF21HP-473	0.047MF	50V	CERAMIC	
	C315	QCF21HP-473	0.047MF	50V	CERAMIC	
	C316	QFP81HJ-271	270PF	50V	POLY	
	C317	QFP81HJ-271	270PF	50V	POLY	
	C318	QETB1HM-476	47MF	50V	ELECTRO	
	C319	QETB1HM-476	47MF	50V	ELECTRO	
	C320	QFN81HK-822	8200PF	50V	MYLAR	
	C321	QFN81HK-822	8200PF	50V	MYLAR	
	C322	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C323	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C324	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C325	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C326	QETB1EM-226	22MF	25V	ELECTRO	
	C327	QETB1EM-226	22MF	25V	ELECTRO	
	C330	QFN81HJ-103	0.01MF	50V	MYLAR	
	C332	QFN81HK-562	5600PF	50V	MYLAR	
	C333	QFN81HK-562	5600PF	50V	MYLAR	
	C340	QFV81HJ-683	0.068MF	50V	T.FILM	
	C341	QFV81HJ-683	0.068MF	50V	T.FILM	
	C342	QCF21HP-102	1000PF	50V	CERAMIC	
	C343	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C344	QFN81HJ-103	0.01MF	50V	MYLAR	
	C352	QETB1EM-106	10MF	25V	ELECTRO	
	C353	QETB1CM-107	100MF	16V	ELECTRO	
	C401	QFN81HJ-103	0.01MF	50V	MYLAR	
	C402	QFV81HJ-224	0.22MF	50V	T.FILM	
	C403	QCBB1HK-681	680PF	50V	CERAMIC	
	C407	QFN81HJ-103	0.01MF	50V	MYLAR	
	C409	QFP81HJ-151	150PF	50V	POLY	
	C410	QFP81HJ-471	470PF	50V	POLY	
	C411	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C412	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C413	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C451	QCBB1HK-151	150PF	50V	CERAMIC	
	C452	QFN81HJ-103	0.01MF	50V	MYLAR	
	C453	QCBB1HK-271	270PF	50V	CERAMIC	
	C454	QETB1EM-106	10MF	25V	ELECTRO	
	C455	QFN81HJ-183	0.018MF	50V	MYLAR	
	C456	QFV81HJ-224	0.22MF	50V	T.FILM	
	C458	QCSB1HJ-180	18PF	50V	CERAMIC	
	C501	QFP81HJ-151	150PF	50V	POLY	
	C502	QFP81HJ-121	120PF	50V	POLY	
	C503	QFV81HJ-273	0.027MF	50V	T.FILM	
	C504	QETB1HM-474	0.47MF	50V	ELECTRO	
	C505	QCSB1HJ-100	10PF	50V	CERAMIC	
	C506	QEN51HM-225	2.2MF	50V	NON POLE	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C507	QFV81HJ-393	0.039MF	50V	T.FILM	
	C508	QETB1CM-476	47MF	16V	ELECTRO	
	C509	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C551	QFN81HJ-183	0.018MF	50V	MYLAR	
	C552	QFN81HJ-102	1000PF	50V	MYLAR	
	C553	QFV81HJ-104	0.1MF	50V	T.FILM	
	C555	QETB1CM-226	22MF	16V	ELECTRO	
	C556	QFV81HJ-104	0.1MF	50V	T.FILM	
	C558	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C559	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C560	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C561	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C601	QFN81HJ-472	4700PF	50V	MYLAR	
	C602	QFN81HJ-472	4700PF	50V	MYLAR	
	C603	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C604	QCSB1HJ-180	18PF	50V	CERAMIC	
	C605	QCBB1HK-471	470PF	50V	CERAMIC	
	C606	QETB1EM-106	10MF	25V	ELECTRO	
	C607	QETB1CM-476	47MF	16V	ELECTRO	
	C608	QFN81HJ-103	0.01MF	50V	MYLAR	
	C610	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C611	QCBB1HK-101	100PF	50V	CERAMIC	
	C651	QCBB1HK-101	100PF	50V	CERAMIC	
	C652	QETB1CM-107	100MF	16V	ELECTRO	
	C653	QFV81HJ-473	0.047MF	50V	T.FILM	
	C654	QETB1EM-106	10MF	25V	ELECTRO	
	C656	QFV81HJ-224	0.22MF	50V	T.FILM	
	C701	QETB1EM-106	10MF	25V	ELECTRO	
	C801	QEN51HM-225	2.2MF	50V	NON POLE	
	C802	QETB1EM-226	22MF	25V	ELECTRO	
	C803	QETBOJM-227	220MF	6.3V	ELECTRO	
	C851	QFN81HJ-272	2700PF	50V	MYLAR	
	C852	QCBB1HK-221	220PF	50V	CERAMIC	
	C853	QFV81HJ-474	0.47MF	50V	T.FILM	
	C854	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C855	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C901	QCBB1HK-101	100PF	50V	CERAMIC	
	C902	QCHB1EZ-223	0.022MF	25V	CERAMIC	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R101	QRD161J-271	270	1/6W	CARBON	
	R102	QRD161J-102	1K	1/6W	CARBON	
⚠	R103	QRZ0077-100	10	1/4W	FUSIBLE	
⚠	R104	QRZ0077-100	10	1/4W	FUSIBLE	
	R105	QRD161J-122	1.2K	1/6W	CARBON	
	R106	QRD161J-122	1.2K	1/6W	CARBON	
	R108	QRD161J-121	120	1/6W	CARBON	
	R109	QRD161J-121	120	1/6W	CARBON	
	R110	QRD161J-392	3.9K	1/6W	CARBON	
	R118	QRD161J-121	120	1/6W	CARBON	
	R119	QRD161J-121	120	1/6W	CARBON	
	R120	QRD161J-121	120	1/6W	CARBON	
	R251	QRD161J-103	10K	1/6W	CARBON	
	R252	QRD161J-103	10K	1/6W	CARBON	
	R257	QRD161J-473	47K	1/6W	CARBON	
	R258	QRD161J-473	47K	1/6W	CARBON	
	R261	QRD161J-473	47K	1/6W	CARBON	
	R262	QRD161J-473	47K	1/6W	CARBON	
	R263	QRD161J-680	68	1/6W	CARBON	
	R264	QRD161J-680	68	1/6W	CARBON	
	R265	QRD161J-390	39	1/6W	CARBON	
	R266	QRD161J-390	39	1/6W	CARBON	
	R301	QRD161J-105	1M	1/6W	CARBON	
	R302	QRD161J-181	180	1/6W	CARBON	
	R303	QRD161J-181	180	1/6W	CARBON	
	R304	QRD161J-181	180	1/6W	CARBON	
	R305	QRD161J-181	180	1/6W	CARBON	
	R310	QRD161J-562	5.6K	1/6W	CARBON	
	R311	QRD161J-562	5.6K	1/6W	CARBON	
	R312	QRD161J-562	5.6K	1/6W	CARBON	
	R313	QRD161J-562	5.6K	1/6W	CARBON	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R314	QRD161J-181	180	1/6W	CARBON	
	R315	QRD161J-104	100K	1/6W	CARBON	
	R316	QRD161J-112	1.1K	1/6W	CARBON	
	R317	QRD161J-112	1.1K	1/6W	CARBON	
	R318	QRD161J-112	1.1K	1/6W	CARBON	
	R319	QRD161J-112	1.1K	1/6W	CARBON	
	R320	QRD161J-331	330	1/6W	CARBON	
	R321	QRD161J-331	330	1/6W	CARBON	
	R322	QRD161J-104	100K	1/6W	CARBON	
	R323	QRD161J-104	100K	1/6W	CARBON	
	R324	QRD161J-682	6.8K	1/6W	CARBON	
	R325	QRD161J-682	6.8K	1/6W	CARBON	
	R326	QRD161J-302	3K	1/6W	CARBON	
	R327	QRD161J-302	3K	1/6W	CARBON	
	R328	QRD161J-512	5.1K	1/6W	CARBON	
	R329	QRD161J-512	5.1K	1/6W	CARBON	
	R330	QRD161J-432	4.3K	1/6W	CARBON	
	R331	QRD161J-432	4.3K	1/6W	CARBON	
	R332	QRD161J-273	27K	1/6W	CARBON	
	R333	QRD161J-273	27K	1/6W	CARBON	
	R334	QRD161J-561	560	1/6W	CARBON	
	R335	QRD161J-561	560	1/6W	CARBON	
	R336	QRD161J-271	270	1/6W	CARBON	
	R337	QRD161J-271	270	1/6W	CARBON	
	R338	QRD161J-562	5.6K	1/6W	CARBON	
	R339	QRD161J-562	5.6K	1/6W	CARBON	
	R340	QRD161J-103	10K	1/6W	CARBON	
	R341	QRD161J-103	10K	1/6W	CARBON	
	R344	QRD161J-271	270	1/6W	CARBON	
	R345	QRD161J-271	270	1/6W	CARBON	
	R346	QRD161J-102	1K	1/6W	CARBON	
	R347	QRD161J-102	1K	1/6W	CARBON	
	R348	QRD161J-684	680K	1/6W	CARBON	
	R352	QRD161J-473	47K	1/6W	CARBON	
	R353	QRD161J-103	10K	1/6W	CARBON	
	R354	QRD161J-101	100	1/6W	CARBON	
	R355	QRD161J-334	330K	1/6W	CARBON	
	R380	QRD161J-273	27K	1/6W	CARBON	
	R381	QRD161J-273	27K	1/6W	CARBON	
	R382	QRD161J-155	1.5M	1/6W	CARBON	
	R383	QRD161J-155	1.5M	1/6W	CARBON	
	R384	QRD161J-124	120K	1/6W	CARBON	
	R401	QRD161J-123	12K	1/6W	CARBON	
	R402	QRD161J-181	180	1/6W	CARBON	
	R403	QRD161J-331	330	1/6W	CARBON	
	R404	QRD161J-182	1.8K	1/6W	CARBON	
	R405	QRD161J-331	330	1/6W	CARBON	
	R407	QRV144F-3302	33K	1/4W	M.FILM	
	R408	QRV144F-3302	33K	1/4W	M.FILM	
	R409	QRD161J-183	18K	1/6W	CARBON	
	R410	QRD161J-103	10K	1/6W	CARBON	
	R411	QRD161J-183	18K	1/6W	CARBON	
	R413	QRD161J-152	1.5K	1/6W	CARBON	
	R414	QRD161J-104	100K	1/6W	CARBON	
	R415	QRD161J-821	820	1/6W	CARBON	
	R417	QRD161J-471	470	1/6W	CARBON	
	R451	QRD161J-472	4.7K	1/6W	CARBON	
	R452	QRD161J-184	180K	1/6W	CARBON	
	R453	QRD161J-562	5.6K	1/6W	CARBON	
	R454	QRD161J-103	10K	1/6W	CARBON	
	R456	QRD161J-104	100K	1/6W	CARBON	
	R457	QRD161J-183	18K	1/6W	CARBON	
	R460	QRD161J-562	5.6K	1/6W	CARBON	
	R462	QRD161J-273	27K	1/6W	CARBON	
	R501	QRD161J-563	56K	1/6W	CARBON	
	R502	QRD161J-563	56K	1/6W	CARBON	
	R503	QRV144F-4703	470K	1/4W	M.FILM	
	R504	QRD161J-681	680	1/6W	CARBON	
	R505	QVPE601-202	2K		VARIABLE	
	R506	QRD161J-821	820	1/6W	CARBON	
	R507	QRV144F-4703	47	1/4W	M.FILM	
	R509	QVPC601-104	100K		VARIABLE	
	R510	QRD161J-223	22K	1/6W	CARBON	
	R511	QRD161J-682	6.8K	1/6W	CARBON	
	R512	QRD161J-103	10K	1/6W	CARBON	
	R513	QRD161J-562	5.6K	1/6W	CARBON	
	R514	QRD161J-562	5.6K	1/6W	CARBON	
	R515	QRD161J-562	5.6K	1/6W	CARBON	
	R516	QRD161J-562	5.6K	1/6W	CARBON	
	R517	QRD161J-183	18K	1/6W	CARBON	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R518	QRD161J-155	1.5M	1/6W	CARBON	
	R519	QRD161J-183	18K	1/6W	CARBON	
	R520	QRD161J-224	220K	1/6W	CARBON	
	R523	QRD161J-684	680K	1/6W	CARBON	
	R524	QRD161J-684	680K	1/6W	CARBON	
	R525	QRD161J-163	16K	1/6W	CARBON	
	R527	QRD161J-104	100K	1/6W	CARBON	
	R528	QRD161J-104	100K	1/6W	CARBON	
	R529	QRD161J-102	1K	1/6W	CARBON	
	R530	QRD161J-183	18K	1/6W	CARBON	
	R531	QRD161J-104	100K	1/6W	CARBON	
	R532	QRD161J-122	1.2K	1/6W	CARBON	
	R533	QRD161J-272	2.7K	1/6W	CARBON	
	R534	QRD161J-181	180	1/6W	CARBON	
	R536	QRD161J-473	47K	1/6W	CARBON	
	R540	QRD161J-223	22K	1/6W	CARBON	
	R541	QRD161J-223	22K	1/6W	CARBON	
	R542	QRD161J-183	18K	1/6W	CARBON	
	R543	QRD161J-183	18K	1/6W	CARBON	
	R545	QRD161J-470	47	1/6W	CARBON	
	R551	QRD161J-392	3.9K	1/6W	CARBON	
	R552	QRD161J-392	3.9K	1/6W	CARBON	
	R553	QRD161J-274	270K	1/6W	CARBON	
	R554	QRD161J-224	220K	1/6W	CARBON	
	R555	QVPE601-104	100K		VARIABLE	
	R557	QRD161J-102	1K	1/6W	CARBON	
	R558	QRD161J-393	39K	1/6W	CARBON	
	R559	QRD161J-471	470	1/6W	CARBON	
	R560	QRD161J-333	33K	1/6W	CARBON	
	R561	QRD161J-822	8.2K	1/6W	CARBON	
	R562	QRD161J-154	150K	1/6W	CARBON	
	R567	QRD161J-105	1M	1/6W	CARBON	
	R568	QRD161J-470	47	1/6W	CARBON	
	R569	QRD161J-473	47K	1/6W	CARBON	
	R570	QRD161J-272	2.7K	1/6W	CARBON	
	R571	QRD161J-472	4.7K	1/6W	CARBON	
	R572	QRD161J-104	100K	1/6W	CARBON	
	R573	QRD161J-562	5.6K	1/6W	CARBON	
	R574	QRD161J-105	1M	1/6W	CARBON	
	R575	QRD161J-105	1M	1/6W	CARBON	
	R576	QRD161J-104	100K	1/6W	CARBON	
	R577	QRD161J-472	4.7K	1/6W	CARBON	
	R579	QRD161J-104	100K	1/6W	CARBON	
	R580	QRD161J-103	10K	1/6W	CARBON	
	R581	QRD161J-103	10K	1/6W	CARBON	
	R582	QRD161J-183	18K	1/6W	CARBON	
	R583	QRD161J-155	1.5M	1/6W	CARBON	
	R585	QRD161J-183	18K	1/6W	CARBON	
	R589	QRD161J-822	8.2K	1/6W	CARBON	
	R590	QRD161J-470	47	1/6W	CARBON	
	R601	QRD161J-183	18K	1/6W	CARBON	
	R602	QRD161J-272	2.7K	1/6W	CARBON	
	R603	QRD161J-391	390	1/6W	CARBON	
	R604	QRD161J-221	220	1/6W	CARBON	
	R605	QRD161J-152	1.5K	1/6W	CARBON	
	R606	QRD161J-561	560	1/6W	CARBON	
	R607	QRD161J-561	560	1/6W	CARBON	
	R608	QRD161J-562	5.6K	1/6W	CARBON	
	R609	QRD161J-152	1.5K	1/6W	CARBON	
	R610	QRD161J-271	270	1/6W	CARBON	
	R611	QRD161J-102	1K	1/6W	CARBON	
	R651	QRD161J-103	10K	1/6W	CARBON	
	R652	QRD161J-272	2.7K	1/6W	CARBON	
	R653	QRD161J-101	100	1/6W	CARBON	
	R656	QRD161J-271	270	1/6W	CARBON	
	R657	QRD161J-103	10K	1/6W	CARBON	
	R658	QRD161J-562	5.6K	1/6W	CARBON	
	R659	QRD161J-103	10K	1/6W	CARBON	
	R660	QRD161J-682	6.8K	1/6W	CARBON	
	R661	QRD161J-103	10K	1/6W	CARBON	
	R663	QRD161J-471	470	1/6W	CARBON	
	R701	QRD161J-563	56K	1/6W	CARBON	
	R702	QRD161J-563	56K	1/6W	CARBON	
	R703	QRD161J-104	100K	1/6W	CARBON	
	R704	QRD161J-104	100K	1/6W	CARBON	
	R801	QRD161J-184	180K	1/6W	CARBON	
	R802	QRD161J-274	270K	1/6W	CARBON	
	R803	QRD161J-123	12K	1/6W	CARBON	
	R804	QRD161J-184	180K	1/6W	CARBON	
	R805	QRD161J-562	5.6K	1/6W	CARBON	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R806	QRD161J-392	3.9K	1/6W	CARBON	
	R808	QRD161J-103	10K	1/6W	CARBON	
	R809	QRD161J-102	1K	1/6W	CARBON	
	R810	QRD161J-471	470	1/6W	CARBON	
	R811	QRD161J-184	180K	1/6W	CARBON	
	R812	QRD161J-183	18K	1/6W	CARBON	
	R813	QRD161J-273	27K	1/6W	CARBON	
	R851	QRD161J-684	680K	1/6W	CARBON	
	R852	QRD161J-684	680K	1/6W	CARBON	
	R853	QRD161J-104	100K	1/6W	CARBON	
	R855	QRD161J-563	56K	1/6W	CARBON	
	R856	QRD161J-473	47K	1/6W	CARBON	
	R857	QRD161J-103	10K	1/6W	CARBON	
	R858	QRD161J-2R2	2.2	1/6W	CARBON	
	R901	QRD161J-471	470	1/6W	CARBON	
	RA601	ERB045J-472	4.7K	1/8W	R.NETWORK	

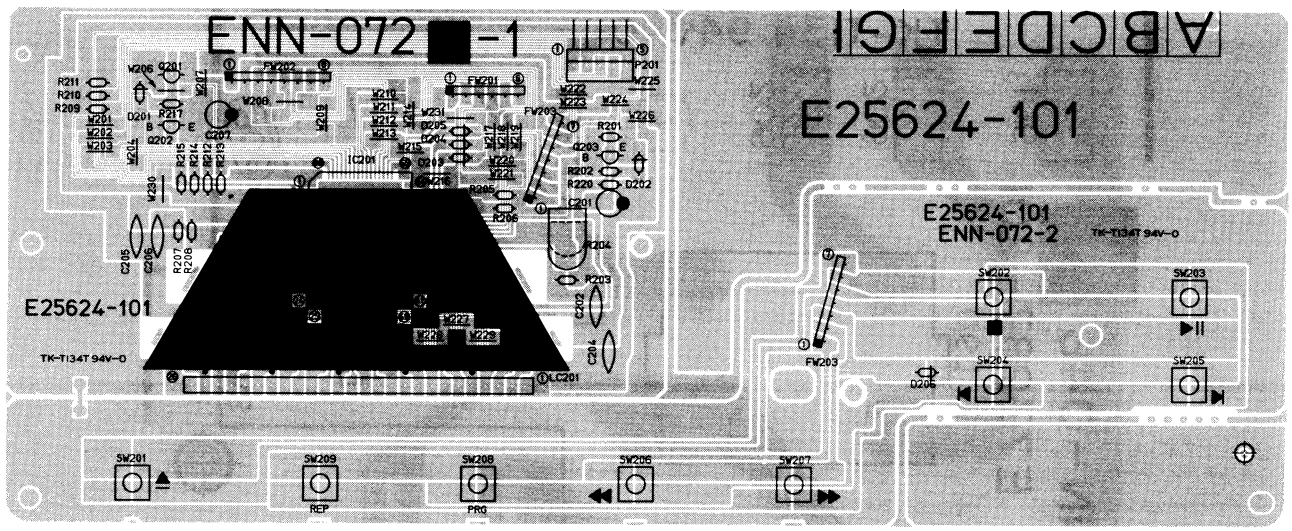
⚠ : SAFETY PARTS

Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		EMG7331-002U	FUSE CLIP	
		EMG7331-002	FUSE CLIP	
		E11456-001	CIRCUIT BOARD	
		E70306-001	HEAT SINK	
		SBSE3008CC	SCREW	
	L401	ENZ3001-002	OSC COIL	
	P101	EMV7112-004	SOCKET	
	P251	QMS6302-131A	JACK ASSY	
	P301	EMN00TV-201A	PIN JACK ASSY	
	P303	QMS3533-001A	JACK ASSY	
	P501	EMV5109-012A	12P PLUG ASSY	
	P502	EMV5109-004A	4P PLUG ASSY	
	P801	EMV7112-008	SOCKET	
	P802	EMV7112-006	SOCKET	
	P803	QMV5005-006K	PULAG ASSY	
	X301	ECX0086-436EF	X'TAL	
⚠	CP101	ICP-N20	I.C.PROTECTOR	
⚠	CP102	ICP-N20	I.C.PROTECTOR	
	L303	EQL4004-1R0	INDUCTOR	
	L304	EQL4004-1R0	INDUCTOR	

⚠ : SAFETY PARTS

■ ENN-072B Front PC Board Ass'y



Transistors

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
				MAKER	
	Q201	DTC144EN	SILICON	ROHM	
	Q202	DTA114YN	SILICON	ROHM	
	Q203	2SA933(R,S)	SILICON	ROHM	

⚠ : SAFETY PARTS

ICs

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
				MAKER	
	IC201	UPD7514G-209-12	I.C.	NEC	

⚠ : SAFETY PARTS

Diodes

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
				MAKER	
	D201	1SS133	SILICON	ROHM	
	D202	1SS133	SILICON	ROHM	
	D203	1SS133	SILICON	ROHM	
	D204	1SS133	SILICON	ROHM	
	D205	1SS133	SILICON	ROHM	
	D206	1SS133	SILICON	ROHM	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C201	QETB1AM-476	47MF	10V	ELECTRO	
	C202	QCS21HJ-470	47PF	50V	CERAMIC	
	C203	QETB1AM-476	47MF	10V	ELECTRO	
	C204	QCF21HP-223	0.022MF	50V	CERAMIC	
	C205	QCF21HP-223	0.022MF	50V	CERAMIC	
	C206	QCF21HP-223	0.022MF	50V	CERAMIC	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R201	QRD161J-152	1.5K	1/6W	CARBON	
	R202	QRD161J-332	3.3K	1/6W	CARBON	
	R203	QRD161J-303	30K	1/6W	CARBON	
	R204	QVPE601-502	5K		VARIABLE	
	R205	QRD161J-333	33K	1/6W	CARBON	
	R206	QRD161J-333	33K	1/6W	CARBON	
	R207	QRD161J-103	10K	1/6W	CARBON	
	R208	QRD161J-103	10K	1/6W	CARBON	
	R209	QRD161J-472	4.7K	1/6W	CARBON	
	R210	QRD161J-472	4.7K	1/6W	CARBON	
	R211	QRD161J-472	4.7K	1/6W	CARBON	
	R212	QRD161J-473	47K	1/6W	CARBON	
	R213	QRD161J-473	47K	1/6W	CARBON	
	R214	QRD161J-473	47K	1/6W	CARBON	
	R215	QRD161J-473	47K	1/6W	CARBON	
	R217	QRD161J-472	4.7K	1/6W	CARBON	
	R220	QRD161J-103	10K	1/6W	CARBON	

⚠ : SAFETY PARTS

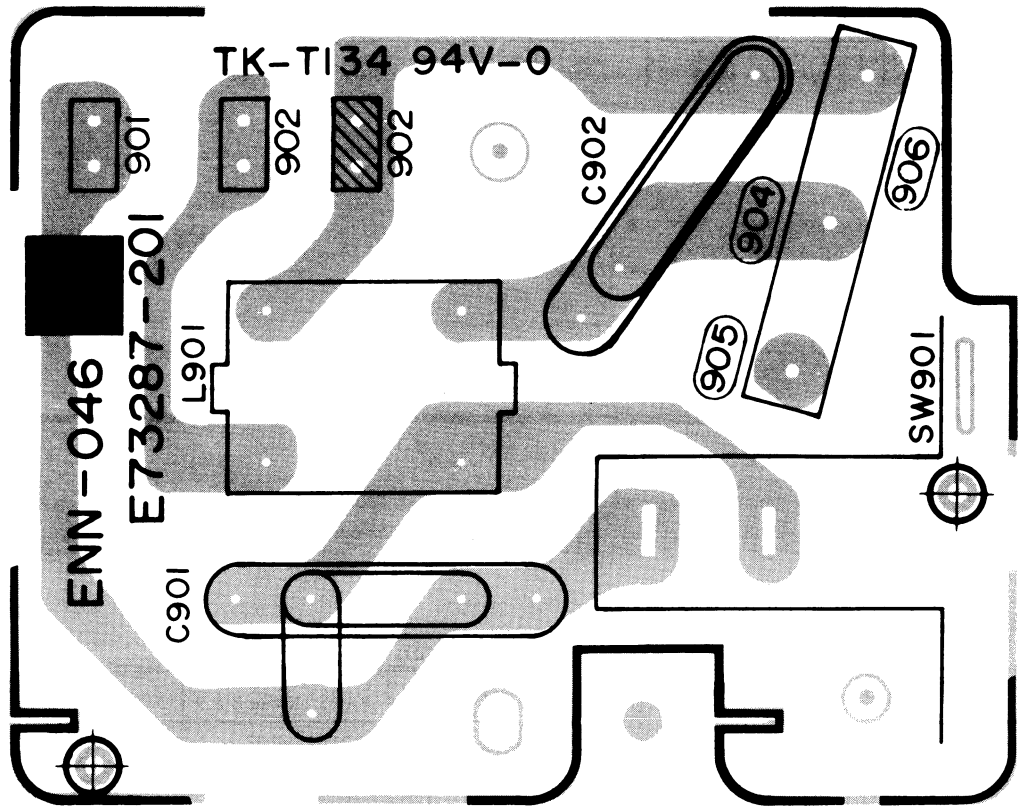
Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		E25624-101	CIRCUIT BOARD	
	P201	QMV5004-005K	PULAG ASSY	
	LC201	ELU0002-035	LCD PANEL	
	SW201	ESP0001-014	PUSH SWITCH	
	SW202	ESP0001-014	PUSH SWITCH	
	SW203	ESP0001-014	PUSH SWITCH	
	SW204	ESP0001-014	PUSH SWITCH	
	SW205	ESP0001-014	PUSH SWITCH	
	SW206	ESP0001-014	PUSH SWITCH	
	SW207	ESP0001-014	PUSH SWITCH	
	SW208	ESP0001-014	PUSH SWITCH	
	SW209	ESP0001-014	PUSH SWITCH	

⚠ : SAFETY PARTS

■ ENN-046□Primary PC Board Ass'y

Note: ENN-046□ varies according to the areas employed. See note (1) when placing an order.



Note (1)

PC Board Ass'y	Designated Areas
ENN-046Ⓐ	U.S.A., Canada
ENN-046Ⓑ	U.S. Military Market & Other Countries
ENN-046Ⓒ	Europe, Australia, Spain, West Germany
ENN-046ⒹBS	U.K.

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C901	QCZ9018-103	0.01MF		CERAMIC	B
	C901	QCZ9038-103	0.01MF		CERAMIC	A
	C901	QCZ9038-103	0.01MF		CERAMIC	C
	C901	QCZ9038-103BS	0.01MF		CERAMIC	DBS
	C902	QFZ9010-223	0.022MF		MYLAR	C
	C902	QFZ9019-223	0.022MF		MYLAR	A
	C902	QFZ9020-223	0.022MF		MYLAR	B
	C902	QFZ9020-223BS	0.022MF		MYLAR	DBS

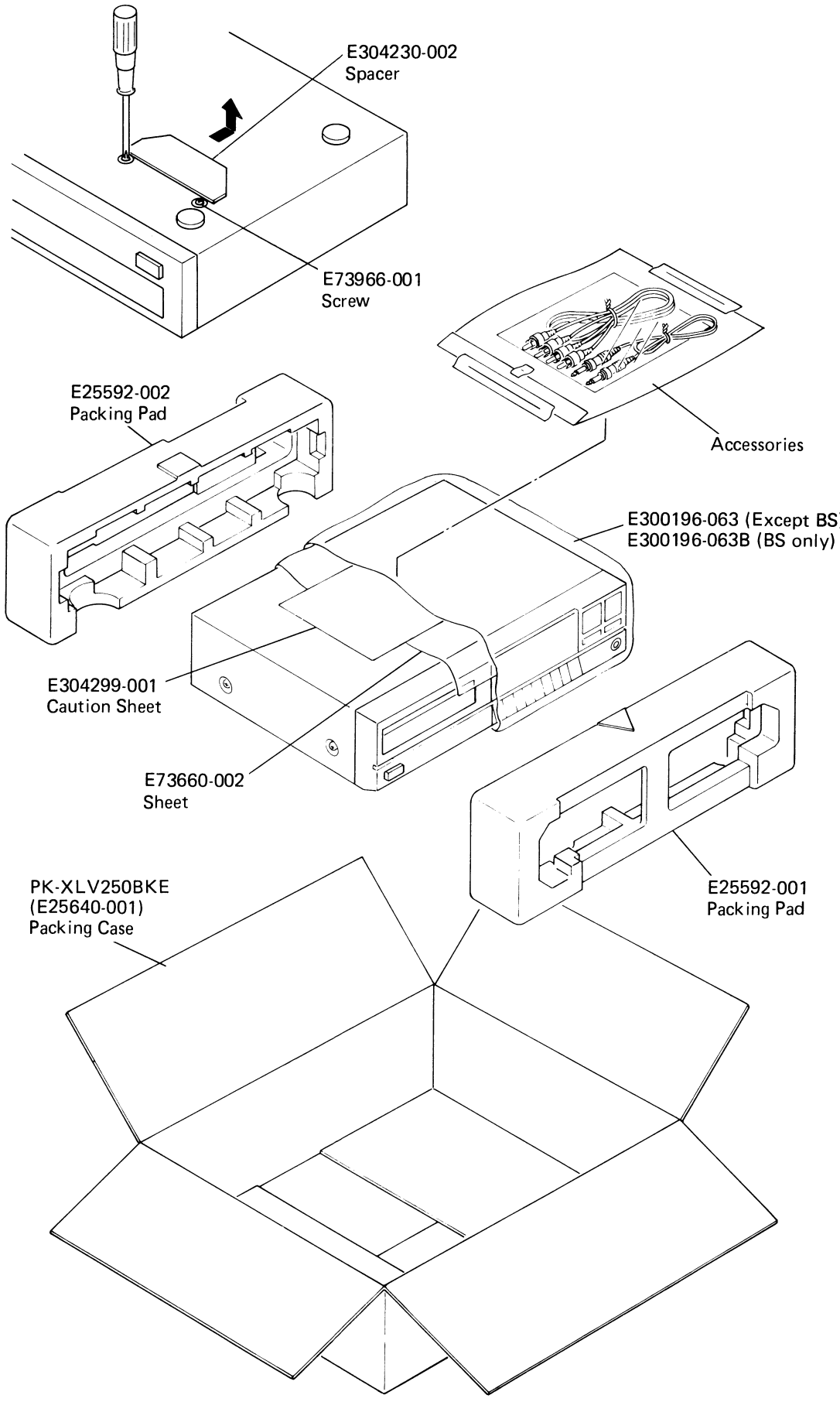
⚠ : SAFETY PARTS

Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		E65508-002	TAB	
		E67764-203	TERMINAL.ASSY	
		E73287-201	CIRCUIT BOARD	A
		E73287-201	CIRCUIT BOARD	B
		E73287-201	CIRCUIT BOARD	C
		E73287-201BS	CIRCUIT BOARD	DBS
		QSP1106-004	PUSH SWITCH	A
		QSP1106-004	PUSH SWITCH	B
		QSP1106-004	PUSH SWITCH	C
		QSP1106-004BS	PUSH SWITCH	DBS
	L901	ENZ5002-004	LINE FILTER	A
	L901	ENZ5002-004	LINE FILTER	B
	L901	ENZ5002-004	LINE FILTER	C
	L901	ENZ5002-004BS	LINE FILTER	DBS

⚠ : SAFETY PARTS

Packing Materials and Parts Numbers



Accessories List

⚠	Parts Number	Parts Name	Q'ty	Description	Areas
	E30580-1386A	Instruction Book	1		Except BS
	E30580-1386ABS	Instruction Book	1		BS only
	BT20047C	Warranty Card	1		J,P,PG
	BT20025J	Warranty Card	1		C
	BT20029C	Warranty Card	1		A
	BT20060	Warranty Card	1		BS
	BT20064	Warranty Card	1		G
	BT20046C	Service Information	1		J,P,PG
	BT20044E	Safety Instruction Sheet	1		J
	BT20071A	Service Center List	1		C
	BT20066	ECC Agency	1		G,BS
	E70570-001	Keeping Card	1		J
	E70571-001	Keeping Card	1		J
	E70572-001	Keeping Card	1		J
	A76332-2	Keeping Card	1		J
	E35497-019	Caution Sheet	1	220V	PG,U
	E35497-017	Caution Sheet	1	110V	P
⚠	E04056	Siemens Plug	1		PG,U
	E66416-003	Envelope	1	for Warranty Card	J
	E41202-004	Envelope	1	for Siemens Plug	PG,U
	E300196-010	Envelope	1	for Instruction Book	Except BS
	E300196-010B	Envelope	1	for Instruction Book	BS only
	EWP302-101	Signal Cord	1	for Output	
	EWP805-001	1P Plug Cord	1	for DCS	

⚠:Safety Parts

The Marks for Designated Areas

J	U.S.A.	BS	U.K.
C	Canada	ES	Spain
A	Australia	P, PG	U.S. Military Market
E	Europe	U	Other Countries
G	West Germany	No Mark indicates all areas.	